



UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

In the Matter of

CERTAIN DIGITAL SATELLITE SYSTEM (DSS)
RECEIVERS AND COMPONENTS THEREOF

Inv. No. 337-TA-392

**NOTICE OF FINAL COMMISSION DETERMINATION OF
NO VIOLATION OF SECTION 337 OF THE TARIFF ACT OF 1930**

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has made a final determination of no violation of section 337 of the Tariff Act of 1930, as amended, in the above-captioned investigation.

FOR FURTHER INFORMATION CONTACT: Carl P. Bretscher, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-3107.

SUPPLEMENTARY INFORMATION: The authority for the Commission's determination is contained in section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and in section 210.45 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.45).

The Commission instituted this patent-based section 337 investigation on December 11, 1996, based on a complaint filed by Personalized Media Communications ("PMC") of New York, New York.¹ PMC's complaint named seven respondents: DIRECTV, Inc., United States Satellite Broadcasting Company ("USSB"); Hughes Network Systems ("HNS"); Hitachi Home Electronics (America) Inc. ("Hitachi"); Thomson Consumer Electronics, Inc. ("Thomson"); Toshiba America Consumer Productions, Inc. ("Toshiba"); and Matsushita Electric Corporation of America ("Matsushita"). DIRECTV, USSB, HNS, and Hitachi will be collectively referred to as the "broadcaster respondents" or "broadcasters," while Thomson, Toshiba, and Matsushita will be collectively referred to as the "manufacturing respondents."

At issue are PMC's allegations that the broadcaster and manufacturing respondents violated section 337 by importing into the United States, selling for importation, and/or selling

¹Notice of Investigation, 61 Fed. Reg. 66,695-96 (Dec. 18, 1996).

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within the United States after importation certain digital satellite system ("DSS") receivers and components thereof that infringe claims 6, 7, and/or 44 of U.S. Letters Patent 5,335,277 ("the '277 patent"), owned by PMC. Other claims originally asserted by PMC were either withdrawn (claims 3, 12, and 15) or were found to be invalid as anticipated under 35 U.S.C. § 102, on respondents' motion for summary judgment (claim 35).

The presiding administrative law judge (ALJ) held an evidentiary hearing from June 30, 1997, to July 12, 1997. On October 20, 1997, the ALJ issued his final initial determination ("ID"), in which he concluded that there was no violation of section 337, based on his findings that: (a) each of claims 6, 7, and 44 is invalid as indefinite under 35 U.S.C. § 112, ¶ 2; (b) each of claims 6, 7, and 44 is invalid as non-enabled under 35 U.S.C. § 112, ¶ 1; (c) claim 7 is invalid as anticipated under 35 U.S.C. § 102; and (d) PMC failed to show that the accused receivers and components infringed any of claims 6, 7, or 44, either directly or through contributory or induced infringement. The ALJ rejected other invalidity and unenforceability defenses raised by respondents and found that PMC satisfied the domestic industry requirement.

On October 31, 1997, PMC filed a petition for review of the ID, arguing that the ALJ erred in finding that each of claims 6, 7, and 44 is invalid as indefinite and non-enabled, and further erred in finding that the accused receivers and components do not infringe any of the claims at issue. The manufacturing and broadcaster respondents filed separate contingent petitions for review, asserting that the Commission should also review the ALJ's findings rejecting certain invalidity and inequitable conduct arguments, provided the Commission grants PMC's petition for review. The broadcaster respondents also requested that the Commission reverse the ALJ's refusal to allow the testimony of their expert witness David Stewart and his rejection of their offer of proof. The Commission investigative attorney did not file a petition for review and, in his response to the petitions for review, generally supported the major findings in the ID.

Having reviewed the record in this investigation, including the parties' written submissions, the Commission determined not to review, and thereby adopted, the ALJ's construction of each of the claims at issue, and his findings that: (1) each of claims 6, 7, and 44 is invalid as indefinite under 35 U.S.C. § 112, ¶ 2; (2) the accused receivers and components do not infringe any of the three claims at issue, either directly or through contributory or induced infringement; and (3) there is consequently no violation of section 337. The Commission took no position on the remaining issues addressed in the ID. Finally, the Commission affirmed the decision of the ALJ to refuse to allow the Stewart testimony and to reject the broadcaster respondents' offer of proof.

Copies of all nonconfidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-2000. Hearing impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal at (202) 205-1810.

By order of the Commission.

Donna R. Koehnke

Donna R. Koehnke
Secretary

Issued: December 4, 1997

CERTAIN DIGITAL SATELITE SYSTEMS
RECEIVERS AND COMPONENTS THEREOF

337-TA-392

PUBLIC CERTIFICATE OF SERVICE

I, Donna R. Koehnke, hereby certify that the attached Notice of Commission Determination of No Violation of Section 337 of the Tariff Act of 1930 was served upon the following parties via first class mail, and air mail where necessary, on December 5, 1997.

Donna R. Koehnke

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CERTAIN DIGITAL SATELITE SYSTEMS
RECEIVERS AND COMPONENTS THEREOF

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United States Court of Appeals for the Federal Circuit

98-1160

PERSONALIZED MEDIA COMMUNICATIONS, LLC,

Appellant,

v.

INTERNATIONAL TRADE COMMISSION,

Appellees,

and

DIRECTV, INC., UNITED STATES SATELLITE BROADCASTING CO.,
HUGHES NETWORK SYSTEMS, and
HITACHI HOME ELECTRONICS (AMERICA), INC.,

Intervenors,

and

THOMSON CONSUMER ELECTRONICS, INC.,
TOSHIBA AMERICA CONSUMER PRODUCTS, INC., and
MATSUSHITA ELECTRIC CORPORATION OF AMERICA,

Intervenors.

DECIDED: November 24, 1998

Before RICH, MICHEL and LOURIE, Circuit Judges.

LOURIE, Circuit Judge.

Personalized Media Communications, LLC ("PMC") appeals from the final determination of the United States International Trade Commission ("the Commission")

that claims 6, 7, and 44 of PMC's patent are not infringed and are invalid for indefiniteness. See In re Certain Digital Satellite Sys. (DSS) Receivers & Components Thereof, No. 337-TA-392 (Int'l Trade Comm. Oct. 20, 1997) (Initial Determination), aff'd in part, (Int'l Trade Comm. Dec. 4, 1997) (Final Determination). Because the Commission erred in concluding that the asserted claims are invalid for indefiniteness and that claim 7 was not infringed, but did not err in concluding that claim 6 was not infringed, we affirm-in-part, reverse-in-part, vacate-in-part, and remand. We decline to address PMC's argument concerning infringement of claim 44.

BACKGROUND

A. The Patented Technology

PMC is the assignee of United States Patent 5,335,277, which pertains generally to systems for use in television broadcasting. The '277 patent specification is quite long; it spans 328 columns and 22 drawing sheets, and contains numerous embodiments of the claimed inventions. Only those embodiments that are necessary to understand the claims at issue are described herein.

The system of the '277 patent includes a unique receiver station that detects and manipulates digital control signals that are embedded in a complex broadcast or cablecast transmission. The specification highlights several benefits that result from the detection and use of the control signals. For example, the control signals can be detected by receiver stations and used to select a specific program from a multi-channel programming transmission. See '277 patent, col. 17, l. 63 to col. 18, l. 2. The control signals can alternatively be used to remotely control the operation of peripheral devices such as VCRs. See id., col. 10, ll. 34-39.

As explained in the specification, a given broadcast can contain several control signals which appear at varying "locations" within the broadcast:

In programming transmissions, given signals may run and repeat, for periods of time, continuously or at regular intervals. Or they may run only occasionally or only once. They may appear in various and varying locations. In television they may appear on one line in the video portion of the transmission such as line 20 of the vertical interval,¹ or on a portion of one line, or on more than one line, and they will probably lie outside the range of the television picture displayed on a normally tuned television set. In television and radio they may appear in a portion of the audio range that is not normally rendered in a form audible to the human ear. . . . In all cases, signals may convey information in discrete words, transmitted at separate times or in separate locations, that [the] receiver apparatus must assemble in order to receive one complete instruction.

Id., col. 9, l. 61 to col. 10, l. 16. Because the location of a given control signal can vary within the transmission, a controller within the system can be programmed or "preinformed" with this location information or other information concerning the control signal in order to identify only the relevant control signal while disregarding other signals. This is also explained in the specification, which notes that "the pattern of the composition, timing, and location of embedded signals may vary in such fashions that only receiving apparatus that are [sic] preinformed regarding the patterns that obtain at any given time will be able to process the signals correctly." Id., col. 9, ll. 43-47.

These aspects of the disclosure are addressed in asserted claims 6 and 7 of the '277 patent, which read as follows:

6. A system for identifying a predetermined signal in a television program transmission in which a plurality of signal types are transmitted[,] said signal being transmitted in a varying location or a varying timing

¹ Although the patent specification is not clear as to the meaning of the words "vertical interval," a term of art, we understand them to refer to a portion of the video broadcast that is not normally visible on a television set.

pattern, said television program transmission being separately defined from standard analog video and audio television, said system comprising:

a digital detector for receiving said transmission and detecting said predetermined signal in said transmission based on either a specific location or a specific time; and

a controller operatively connected to said detector for causing said detector to detect said predetermined signal based on either a specific location or time, said controller being programmed with either the varying locations or the varying timing pattern of said signal.

7. A system for locating or identifying a specific signal in a television program transmission that contains digital information and for assembling information contained in said specific signal, said transmission being separately defined from standard analog video and audio television, said system comprising:

a digital detector for receiving at least some information of said transmission and detecting said specific signal at a specific location or time;

a storage device operatively connected to said digital detector for receiving detected digital information of said specific signal and assembling at least some of said digital information into either information or instruction message units; and

a controller operatively connected to said detector and said storage device for causing said detector to locate, detect or output said signal and for controlling a technique used by said storage device to assemble message units, said controller being programmed with information of the composition of said signal or with either the varying location or the varying timing pattern of said signal.

Another aspect of the disclosed system relates to the ability to create a "video overlay." In one example provided in the specification, viewers see a user-customized version of a weekly television program "Wall Street Week" in which the performance of their personal stock portfolios is shown as a video overlay on top of a graph showing the market's overall performance. The details of this procedure are explained as follows:

[The TV monitor] displays the conventional television image and the sound of the transmitted "Wall Street Week" program. During this time the program may show the so-called "talking head" of the host as he describes the behavior of the stock market over the course of the week. Then the host says, "Now as we turn to the graphs, here is what the Dow Jones Industrials did in the week just past," and a studio generated graphic is transmitted. FIG. 1B shows the image of said graphic as it appears on the video screen of the TV monitor. Then the host says, "And here is what your portfolio did." At this point, an instruction signal is generated at said program originating studio, embedded in the programming transmission, and transmitted. Said signal is identified by [the decoder at the receiver station], transferred to [the microcomputer,] and executed by the microcomputer [] at the system level as the statement, "GRAPHICS ON." Said signal instructs [the microcomputer] to overlay the graphic information in its graphics card onto the received composite video information and transmit the combined information to [the TV monitor]. [The TV monitor] then displays the image shown in FIG. 1C which is the microcomputer generated graphic of the subscriber's own portfolio performance overlaid on the studio generated graphic.

Id., col. 16, ll. 21-48. Other embodiments disclose the use of a "local input" that may be used by the customer to interact with the programming content in a more flexible manner. See, e.g., id., col. 161, l. 53 et seq.

These aspects of the disclosure are addressed in asserted claim 44, which reads as follows:

44. A television receiver system comprising:

a television receiver for receiving a selected broadcast or cable cast television transmission and transferring television programming in said transmission to a television display;

an input device for inputting information of the reaction of a viewer to specific television program content;

a digital detector operatively connected to a mass medium receiver for detecting digital information in a mass medium transmission and transferring some of said detected information to a processor[;]

a processor operatively connected to said detector and said input device for generating and outputting information of a video overlay that is related to said television programming or said reaction information; and

a television display device operatively connected to said processor for receiving and displaying said video overlay.

B. The Proceedings Before the Commission

PMC filed a complaint with the Commission asserting that the various Intervenors² herein were importing Digital Satellite Systems (DSSs) that infringed claims 6, 7, and 44 of PMC's '277 patent in violation of 19 U.S.C. § 1337(a) (1994) ("Section 337"). In response, the Commission instituted an investigation on December 18, 1996, see 61 Fed. Reg. 66695-96 (1996), which culminated in a 450-page Initial Determination in which the Administrative Law Judge (ALJ) recommended that the Commission conclude that Section 337 had not been violated. Specifically, the ALJ concluded that: (1) the asserted claims were invalid as indefinite under 35 U.S.C. § 112, ¶ 2; (2) the asserted claims were invalid as not enabled under 35 U.S.C. § 112, ¶ 1; (3) claim 7 is invalid as anticipated under 35 U.S.C. § 102; and (4) no asserted claim was infringed. PMC petitioned the Commission to review the Initial Determination. The Commission determined not to review, and thereby adopted, the ALJ's various claim constructions and his conclusions that the claims were indefinite and not infringed. See Final Determination at 2. However, the Commission took "no position" on the remaining issues addressed in the Initial Determination. See id. Accordingly, only the ALJ's claim construction, indefiniteness, and noninfringement determinations are before this court.³

² Because the Intervenors and the Commission generally make the same arguments to this court in support of the Commission's decision, we refer to them collectively for convenience as "the Commission."

³ See Beloit Corp. v. Valmet OY, 742 F.2d 1421, 1423, 223 USPQ 193, 194 (Fed. (continued . . .)

1. Indefiniteness

The ALJ's indefiniteness determination turned upon his conclusion that the claim limitation "digital detector for . . .," a limitation appearing in all of the asserted claims, constituted a means-plus-function limitation to be construed in accordance with 35 U.S.C. § 112, ¶ 6 (1994). The ALJ interpreted this limitation to be "a functional phrase, not limited to particular structure." Initial Determination at 82. The ALJ first consulted dictionary definitions, but found that "dictionary definitions of 'detector,' 'digital,' and 'digital circuit' do not resolve the question whether the entire phrase digital detector conveys specific structure to one of ordinary skill in the art." Id. at 67. The ALJ also found that the specification lacked a "specific structure" for a "digital detector," but instead merely described a digital detector in functional terms, *i.e.*, as a device that "acts to detect the digital signal information embedded in [the information which constitutes the video transmission]." Id. at 70 (citing '277 patent, col. 21, ll. 46-47).⁴ Finally, the ALJ referenced the testimony of various experts to the effect that while one of ordinary skill would understand a "digital detector" to refer to a detector of digital information, the phrase lacked a specific structure and could not be built by those of ordinary skill. See id. at 73-82.

Having concluded that the scope of the term "digital detector" was governed by § 112, ¶ 6, the ALJ consulted the specification to determine whether it contained

Cir. 1984) (noting that the Commission may at its discretion review only certain dispositive issues resolved in the Initial Determination).

⁴ Apart from similar textual descriptions, the specification does not detail the circuitry comprising a "digital detector." The relevant figures disclose "digital detectors" merely as functional blocks. See '277 patent, Fig. 2A.

corresponding structure, but, as already mentioned, found none. Accordingly, and relying on In re Dossel, 115 F.3d 946, 42 USPQ2d 1881 (Fed. Cir. 1997),⁵ the ALJ concluded that the term "digital detector" was indefinite and held the claims invalid.

2. Noninfringement

a. Claims 6 and 7

The ALJ considered two arguments concerning infringement by the accused DSSs. The first turned on PMC's proffered construction of the claim term "location." The ALJ concluded, based in large part on the portion of the specification quoted supra, that the term "location" included "a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission." Initial Determination at 88. Accordingly, the ALJ rejected PMC's argument that the term "location" refers to the "carrier wave"⁶ of the control

⁵ In Dossel, we stated that a claim containing a means-plus-function element will generally be held indefinite if the specification does not contain an adequate disclosure of structure corresponding to the function of the claims. See Dossel, 115 F.3d at 946, 42 USPQ2d at 1885 (citing In re Donaldson Co., 16 F.3d 1189, 1195, 29 USPQ2d 1845, 1850 (Fed. Cir. 1994) (en banc)). Despite this general rule, in Dossel we held, on "specific facts," a means-plus-function claim not invalid for indefiniteness under § 112, ¶ 2 even though the algorithmic structure corresponding to "means for reconstructing" was not specifically disclosed in the written description. See id. at 946-47, 42 USPQ2d at 1885 ("Neither the written description nor the claims uses the magic word 'computer,' nor do they quote the computer code that may be used in the invention. . . . [However, w]hile the written description does not disclose exactly what mathematical algorithm will be used to compute the end result, it does state that 'known algorithms' can be used to solve standard equations which are known in the art."). The ALJ here found Dossel's "specific facts" distinguishable from the present case. See Initial Determination at 140.

⁶ Understanding PMC's argument requires a brief explanation of television broadcast technology. When a television program is broadcast, the program information or "baseband" signal is enveloped within a "carrier wave" whose frequency corresponds to a particular television channel. This process is known as "modulation." When the modulated signal is received at a given television set, the tuner of the set is

(continued . . .)

signal of the claims, and therefore that selection of a given carrier wave in a multi-channel transmission is a selection of a control signal based on its location. See id. at 93. The ALJ, inter alia, found PMC's proffered construction to conflict with the requirement of the claims that the control signal appear in a "television program transmission," which the ALJ construed as referring to a single-channel and not a multi-channel transmission. Id. at 89-90.

The second infringement argument concerned the use of Service Channel IDs (SCIDs) in the accused DSSs. The function of a SCID was explained by a witness for one of the intervenors as follows:

[A] single data stream [comes] into the tuner, demodulator, and Forward Error Correction circuitry. After this point, the single data stream goes into the Transport IC, where the individual packets of data . . . are looked at and, if the SCID of the packet matches the SCID of the selected channel, those video and audio data packets are then [decoded]. There is no location or timing pattern associated with the data processing. These packets arrive in a[n] unpredictable order with unpredictable timing.

Id. at 228. Central to the ALJ's conclusion that the SCID does not constitute the control signal of the claims and thus does not infringe was his conclusion that the SCID is "information of the 'composition' of a signal; rather than its 'location.'" Id. at 228. The

used to select a given carrier wave in accordance with its frequency. The selected carrier wave is then "demodulated" such that the carrier wave is in essence stripped away, revealing the baseband signal, which is then used directly by the circuitry of the set to display the picture.

⁷ The specification provides insight into what constitutes the "composition" of signal information. For example, one signal's composition commences with "header" information, followed by an "execution segment," a "meter-monitor segment," and an "information segment." See '277 patent, col. 27, ll. 37-47.

The ALJ concluded that the "header" information disclosed in the '277 patent was "the equivalent of" the SCID of the accused devices. See Initial Determination at 229.

ALJ was assisted in this conclusion by the fact that claim 7 draws a distinction between a signal's composition and its location.⁸ The ALJ thus concluded that the accused DSSs did not identify the SCID at a "specific location" and therefore did not infringe either claim 6 or 7. See id. at 230, 233.

b. Claim 44

PMC's theory concerning infringement of claim 44 was summarized by the ALJ as follows:

[PMC argues] that a user of the accused DSS system may be tuned to a pay-per-view channel on which the DBS broadcast is intended to solicit the viewer to buy the program by displaying film clips from the movie as well as discussions with the director and actors; that if the viewer presses the appropriate button on the keypad of the remote control, indicating that the user wants more information about the program, the processor in the DSS receivers will generate an overlay displaying additional information about the program such as the start time, title and rating of the program; that the DSS receivers display video overlays related to "the television program" such as an information banner, which includes [similar information]; and that the DSS receivers display the Program Guide, which is a video overlay displaying [similar information] and is generated in response to the viewer pressing the appropriate button on the remote control.

Id. at 234. The ALJ found that the accused DSSs did not infringe claim 44 because they did not "have the capacity to generat[e] and output[] information of the video overlay that is related to 'said television programming' or 'said reaction information' as required by claim 44." Id. at 235 (emphasis in original). More specifically, the ALJ found that

⁸ Claim 7 reads in relevant part: "said controller being programmed with information of the composition of said signal or with either the varying location or the varying timing pattern of said signal." (emphasis added).

it is undisputed that when the DSS system is in use, i.e., receiving a "mass-medium transmission" and generating a "video overlay," the [portion of the DSS system that corresponds to the claimed "television receiver"] is not capable of receiving a "television transmission" . . . and] therefore [cannot] transfer "television programming" from said transmission to the ["television display"].

Id. at 235-36.

PMC appealed the judgment to this court. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(6) (1994).

DISCUSSION

We review factual findings of the Commission under the "substantial evidence" standard. See 19 U.S.C. § 1337(c) (1994) (stating that those adversely affected by a Section 337 determination may appeal to this court for review in accordance with chapter 7 of Title 5); 5 U.S.C. § 706(2)(E) (1994) (setting forth the "substantial evidence" standard of review); Intel Corp. v. United States Int'l Trade Comm'n, 946 F.2d 821, 832, 20 USPQ2d 1161, 1171 (Fed. Cir. 1991). Under this standard, we will not disturb the Commission's factual findings if they are supported by "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." Surface Tech., Inc. v. United States Int'l Trade Comm'n, 801 F.2d 1336, 1340-41, 231 USPQ 192, 196 (Fed. Cir. 1986). We review the Commission's legal determinations de novo. See 5 U.S.C. § 706(2)(A) (1994); YBM Magnex, Inc. v. International Trade Comm'n, 145 F.3d 1317, 1320, 46 USPQ2d 1843, 1845 (Fed. Cir. 1998).

"An infringement analysis entails two steps. The first step is determining the meaning and scope of the patent claims asserted to be infringed. The second step is comparing the properly construed claims to the device accused of infringing." Markman

v. Westview Instruments, Inc., 52 F.3d 967, 976, 34 USPQ2d 1321, 1326 (Fed. Cir. 1995) (en banc), aff'd, 517 U.S. 370, 38 USPQ2d 1461 (1996). The first step, claim construction, is a question of law which we review de novo. See Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1456, 46 USPQ2d 1169, 1174 (Fed. Cir. 1998) (en banc). The second step is factual. See North Am. Vaccine, Inc. v. American Cyanamid Co., 7 F.3d 1571, 1574, 28 USPQ2d 1333, 1335 (Fed. Cir. 1993). When construing a claim, a court principally consults the evidence intrinsic to the patent, viz., the claims themselves, the written description portion of the specification, and the prosecution history. See Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582-83, 39 USPQ2d 1573, 1576-77 (Fed. Cir. 1996). Whether certain claim language invokes 35 U.S.C. § 112, ¶ 6 is an exercise in claim construction and is therefore a question of law, reviewable de novo by this court. See Mas-Hamilton Group v. LaGard, Inc., 156 F.3d 1206, 1213-14, 48 USPQ2d 1010, 1016-17 (Fed. Cir. 1998) (embarking upon de novo review). Likewise, whether a claim is indefinite under 35 U.S.C. § 112, ¶ 2 is also a question of law, reviewable de novo by this court. See North Am. Vaccine, Inc. v. American Cyanamid Co., 7 F.3d 1571, 1579, 28 USPQ2d 1333, 1339 (Fed. Cir. 1993).

A. Applicability of 35 U.S.C. § 112, ¶ 6

PMC argues that the Commission erred in construing the "digital detector" limitation as a means-plus-function limitation under 35 U.S.C. § 112, ¶ 6. In support, PMC contends that the term "digital detector" recites sufficiently definite structure to prevent the application of § 112, ¶ 6 under our case law. PMC also points out that our case law makes clear that § 112, ¶ 6 should not be invoked merely because this structure takes its name in accordance with its function. Finally, PMC argues that the

lack of the term "means" in this limitation invokes a presumption that § 112, ¶ 6 does not apply. The Commission responds that the evidence of record makes it clear that one of ordinary skill in the electrical arts would not have understood the term "digital detector" to connote a definite structure, and therefore that this limitation is defined entirely by the functional language that follows the language "digital detector for . . ." Accordingly, they contend that § 112, ¶ 6 is applicable to this limitation.

Section § 112, ¶ 6 provides that

[a]n element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112, ¶ 6 (1994) (emphasis added). Thus, § 112, ¶ 6 operates to restrict claim limitations drafted in such functional language to those structures, materials, or acts disclosed in the specification (and their equivalents) that perform the claimed function.

We have had several recent opportunities to assess whether certain claim language has invoked § 112, ¶ 6. In Greenberg v. Ethicon Endo-Surgery, Inc., 91 F.3d 1580, 39 USPQ2d 1783 (Fed. Cir. 1996), we were presented with the claim language "detent mechanism defining conjoint rotation of said shafts." In deciding that § 112, ¶ 6 was not invoked, we stated

[T]he fact that a particular mechanism—here "detent mechanism"—is defined in functional terms is not sufficient to convert a claim element containing that term into a "means for performing a specified function" within the meaning of [§ 112, ¶ 6]. Many devices take their names from the functions they perform. The examples are innumerable, such as "filter," "brake," "clamp," "screwdriver," or "lock." . . .

"Detent" (or its equivalent "detent mechanism") is just such a term. Dictionary definitions make clear that the noun "detent" denotes a type of device with a generally understood meaning in the mechanical arts, even though the definitions are expressed in functional terms. It is true that "detent" does not call to mind a single well-defined structure, but the same could be said of other commonplace structural terms such as "clamp" or "container." What is important is not simply that a "detent" or "detent mechanism" is defined in terms of what it does, but that the term, as the name for structure, has a reasonably well understood meaning in the art.

Greenberg, 91 F.3d at 1583, 39 USPQ2d at 1786 (citations omitted). We also made clear that use of the term "means" is central to the analysis: "the use of the term 'means' has come to be so closely associated with 'means-plus-function' claiming that it is fair to say that the use of the term 'means' (particularly as used in the phrase 'means for') generally invokes [§ 112, ¶ 6] and that the use of a different formulation generally does not." Id. at 1584, 39 USPQ at 1787.

Subsequent cases have clarified that use of the word "means" creates a presumption that § 112, ¶ 6 applies, see York Prods., Inc. v. Central Tractor, 99 F.3d 1568, 1574, 40 USPQ2d 1619, 1623 (Fed. Cir. 1996) ("In determining whether to apply the statutory procedures of [§ 112, ¶ 6], the use of the word 'means' triggers a presumption that the inventor used this term advisedly to invoke the statutory mandates for means-plus-function clauses."),⁹ and that the failure to use the word "means" creates

⁹ See also Unidynamics Corp. v. Automatic Prods. Int'l, Ltd., 157 F.3d 1311, 1319, 48 USPQ2d 1099, 1104 (Fed. Cir. 1998) (holding that the claim language "spring means tending to keep the door closed" invokes § 112, ¶ 6: "the recitation of 'spring,' which is structural language, [does not take] the limitation out of the ambit of the construction dictate of § 112, ¶ 6."); Serrano v. Tellular Corp., 111 F.3d 1578, 1582, 42 USPQ2d 1538, 1541 (Fed. Cir. 1997) (holding that the claim language "determination means . . . for determining" invokes § 112, ¶ 6); Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1536, 19 USPQ2d 1367, 1369 (Fed. Cir. 1991) (holding that the claim (continued . . .)

a presumption that § 112, ¶ 6 does not apply, Mas-Hamilton, 156 F.3d at 1213, 48 USPQ2d at 1016. These presumptions can be rebutted if the evidence intrinsic to the patent and any relevant extrinsic evidence so warrant.¹⁰ See, e.g., Cole v. Kimberly-Clark Corp., 102 F.3d at 524, 531, 41 USPQ2d 1001, 1006 (Fed. Cir. 1996) (noting that whether § 112, ¶ 6 is invoked involves an analysis of the "patent and the prosecution history," and consulting a dictionary definition of "perforation" to understand if one of

language "means for joining said pluralities [of link ends] to one another so that the axes of [certain holes are arranged in certain configurations]" invokes § 112, ¶ 6: "The recitation of some structure in a means-plus-function element does not preclude the applicability of [§ 112, ¶ 6 when it] merely serves to further specify the function of the means. The recited structure tells only what the means-for-joining does, not what it is structurally.") (emphasis in original).

¹⁰ See, e.g., Mas-Hamilton, 156 F.3d at 1214, 48 USPQ2d at 1017 (holding that the claim language "lever moving element for moving the lever" invokes § 112, ¶ 6: "even though the catch phrase ['means for'] is not used, the limitation's language does not provide any structure. The limitation is drafted as a function to be performed rather than definite structure or materials."); id. at 1215, 48 USPQ2d at 1017 (holding that the claim language "a movable link member for . . ." invokes § 112, ¶ 6); York, 99 F.3d at 1573-75, 40 USPQ2d at 1623-24 (holding that the claim language "means formed on the . . . sidewall portions including a plurality of spaced apart . . . members protruding from the . . . sidewall portions and forming load lock . . ." did not invoke § 112, ¶ 6: "The claim language does not link the term means to a function. . . Instead, the claim recites structure. . . . Without a 'means' sufficiently connected to a recited function, the presumption in use of the word 'means' does not operate."); Cole v. Kimberly-Clark Corp., 102 F.3d at 524, 531, 41 USPQ2d 1001, 1006-07 (Fed. Cir. 1996) (holding that the claim language "perforation means extending from the leg band means to the waist band means through the outer impermeable layer means" did not invoke § 112, ¶ 6: this language "describes the structure supporting the tearing function (i.e., perforations). The claim describes not only the structure that supports the tearing function, but also its location (extending from the leg band to the waist band). An element with such a detailed recitation of structure, as opposed to its function, cannot meet the requirements of [§ 112, ¶ 6]."); see also Unidynamics, 157 F.3d at 1319, 48 USPQ2d at 1105 (distinguishing Cole: "[We held that the claim limitation in Cole] did not meet the requirement of § 112, ¶ 6 because it not only described definite structure, perforations, that supported the described function, tearing, but also described the location and extent of the structure. Here, spring is the only recitation of structure . . .") (citation omitted).

skill in the art would understand this term to connote structure). In deciding whether either presumption has been rebutted, the focus remains on whether the claim as properly construed recites sufficiently definite structure to avoid the ambit of § 112, ¶ 6.

See Sage Prods. v. Devon Indus., Inc., 126 F.3d 1420, 1427-28, 44 USPQ2d 1103, 1109 (Fed. Cir. 1997) ("[W]here a claim recites a function, but then goes on to elaborate sufficient structure, material, or acts within the claim itself to perform entirely the recited function, the claim is not in means-plus-function format" even if the claim uses the term "means").

Taking these principles into consideration, we agree with PMC that the Commission erred in construing the term "digital detector" as a means-plus-function limitation. The "digital detector" limitation does not use the word "means," and therefore this limitation is presumed not to invoke § 112, ¶ 6. Neither intrinsic nor extrinsic evidence rebuts this presumption because the term "detector" is a sufficient recitation of structure. "Detector" is not a generic structural term such as "means," "element," or "device"; nor is it a coined term lacking a clear meaning, such as "widget" or "ram-a-fram."¹¹ Instead, as noted by the ALJ by reference to dictionary definitions, "detector" had a well-known meaning to those of skill in the electrical arts connotative of structure, including a rectifier or demodulator.¹² No other extrinsic evidence, including the expert

¹¹ The latter of these terms was creatively coined by Judge Michel at oral argument in this case.

¹² For example, the ALJ quoted the following dictionary definition of "detector": "(1) a device for determining the presence of a signal (2) : a rectifier of high-frequency current (as a cat whisker and crystal or a vacuum tube) (3) : a device for extracting the intelligence from a signal (4) DEMODULATOR 1." Initial Determination at 66 (citation to Webster's omitted).

testimony, and no evidence intrinsic to the patent casts doubt on this conclusion. Moreover, neither the fact that a "detector" is defined in terms of its function, nor the fact that the term "detector" does not connote a precise physical structure in the minds of those of skill in the art detracts from the definiteness of structure. See Greenberg, 91 F.3d at 1583, 39 USPQ2d at 1786 (quoted supra). Even though the term "detector" does not specifically evoke a particular structure, it does convey to one knowledgeable in the art a variety of structures known as "detectors." We therefore conclude that the term "detector" is a sufficiently definite structural term to preclude the application of § 112, ¶ 6.

Much of the ALJ's analysis (and the Commission's arguments to this court) centered around the ambiguity raised by the phrase "digital detector." However, an adjectival qualification ("digital") placed upon otherwise sufficiently definite structure ("detector") does not make the sufficiency of that structure any less sufficient for purposes of § 112, ¶ 6. Instead, it further narrows the scope of those structures covered by the claim and makes the term more definite. The use of the word "digital" in conjunction with the word "detector" merely places an additional functional constraint (extraction of digital information) on a structure (detector) otherwise adequately defined. See, e.g., '277 patent, col. 21, ll. 46-47 (defining "digital detector" as a device that "acts to detect the digital signal information" in other information). Accordingly, we hold that the "digital detector" limitations in asserted claims 6, 7, and 44 recite sufficiently definite structure and therefore do not come within the ambit of § 112, ¶ 6.

B. Indefiniteness

Having decided that § 112, ¶ 6 does not apply to the "digital detector" limitation of the asserted claims, much of the support for the ALJ's rationale for declaring the claims invalid under Donaldson and Dossel disappears: See note 5, supra. However, the Commission still contends that the term "digital detector" is indefinite irrespective of the applicability of § 112, ¶ 6. Specifically, it contends that the evidence of record, particularly the expert testimony relied on by the ALJ, shows that the term "digital detector" has no well-understood meaning in the art and is therefore indefinite. PMC disagrees with the Commission's assessment of the evidence and argues that the term "digital detector" has a well-understood meaning in the art. PMC also contends that the specification clearly apprises one of ordinary skill of the scope of the term.

As mandated by the definiteness requirement of 35 U.S.C. § 112, ¶ 2, a specification shall include claims "particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention" (emphasis added). Determining whether a claim is definite requires an analysis of "whether one skilled in the art would understand the bounds of the claim when read in light of the specification If the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention, § 112 demands no more." Miles Lab., Inc. v. Shandon, Inc., 997 F.2d 870, 875, 27 USPQ2d 1123, 1126 (Fed. Cir. 1993). A determination of claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims. Cf. North Am. Vaccine, Inc. v. American Cyanamid Co., 7 F.3d 1571, 1579, 28 USPQ2d 1333, 1339 (Fed. Cir. 1993) ("[W]hile the parties in the midst of a dispute have disagreed concerning the meaning of the claims, the claims are not so lacking in clarity as to be invalid [as indefinite].").

We agree with PMC and conclude that the Commission erred in holding the asserted claims to be indefinite. Here, the written description of the specification is sufficient to inform one skilled in the art of the meaning of the claim language "digital detector." It explicitly defines a "digital detector" as a device that "acts to detect the digital signal information" in another stream of information.¹³ See '277 patent, col. 21, ll. 46-47 (detection of digital signal in video transmission); id. at ll. 59-60 (detection of digital signal in audio transmission); id. at ll. 63-65 (detection of digital signal in "any other information portion of said television signal"); see also Beachcombers, Int'l, Inc. v. WildeWood Creative Prods., Inc., 31 F.3d 1154, 1158-59, 31 USPQ2d 1653, 1656-57 (Fed. Cir. 1994) (vacating jury verdict of indefiniteness in light of clear definition of disputed claim limitation in the written description); W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1557, 220 USPQ 303, 316 (Fed. Cir. 1983) ("The use of 'stretching . . . at a rate exceeding about 10% per second' in the claims is not indefinite. Infringement is clearly assessable through the use of a stopwatch.") (deletion in original).

The expert testimony relied upon by the parties does not alter this conclusion. Extrinsic evidence may not be relied upon during claim construction when the intrinsic evidence unambiguously defines the disputed claim language. See Bell & Howell Document Management Prods. Co. v. Altek Sys., 132 F.3d 701, 706, 45 USPQ2d 1033,

¹³ Because the written description clearly defines the scope of the term "digital detector," we reject PMC's proffered construction of this phrase to mean "demodulation circuitry for extracting digital information from a carrier signal." PMC's Opening Brief at 26.

1038 (Fed. Cir. 1997). Accordingly, because the meaning of the term "digital detector" is unambiguously set forth in the specification, the expert testimony on this issue is irrelevant to the issue of indefiniteness and cannot serve to inject ambiguity where none exists.

The Commission makes much of the fact that the specification is otherwise silent concerning the structure of a "digital detector," and it notes that the "digital detectors" of the circuit diagrams do not reveal circuit elements constituting such a device, but only portray these devices as mere functional blocks. See, e.g., '277 patent, Fig. 2A. Moreover, the Commission relies on expert testimony stating generally that a "digital detector" was not adequately disclosed in the patent and could not be built by those of ordinary skill. See, e.g., Initial determination at 77 (testimony of Ciciora: "there is no clue that any engineer of ordinary skill . . . could begin to put pencil to paper and say here is how I would build the contents of [the digital detector] block. It is completely underspecified."); id. at 79 (testimony of Williams: "[The patent] shows a digital detector. It does not go into detail of how it may work . . .").

We conclude that the evidence relied upon by the Commission does not indicate imprecision of the claims. Instead, it is relevant, if at all, only to the sufficiency of the written description to enable the practice of the invention of the claims, which is a ground of invalidity under § 112, ¶ 1.¹⁴ See In re Borkowski, 422 F.2d 904, 909, 164 USPQ 642, 645-46 (CCPA 1970) (noting that a claim of clear scope that is not

¹⁴ "The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms (continued . . .)

adequately supported by an enabling disclosure commensurate with that scope is objectionable under § 112, ¶ 1, not § 112, ¶ 2); In re Ehrreich, 590 F.2d 902, 906, 200 USPQ 504, 508 (CCPA 1979) ("[§ 112, ¶ 2] pertains only to claims. . . . Agreement, or lack thereof, between the claims and the specification is properly considered only with respect to [§ 112, ¶ 1]; it is irrelevant to compliance with [§ 112, ¶ 2]"); cf. Miles Labs., Inc. v. Shandon, Inc., 997 F.2d 870, 875, 27 USPQ2d 1123, 1126 (Fed. Cir. 1993) (dismissing the defendant's argument as "irrelevant to definiteness under § 112, ¶ 2. The invention's operability may say nothing about a skilled artisan's understanding of the bounds of the claim. [Defendant's] argument is possibly relevant, however, to the enablement requirement of § 112, ¶ 1, or to utility under § 101."). We are aware that the ALJ held the claims invalid under § 112, ¶ 1 for lack of enablement, specifically focusing on the "digital detector" limitation.¹⁵ However, we express no opinion on any theory of invalidity under § 112, ¶ 1 because such a ground of decision is not before us as it was not reviewed by the Commission. See note 3, supra, and accompanying text. In any event, citation of evidence bearing solely on § 112, ¶ 1 infirmities does not aid the Commission in supporting the ALJ's indefiniteness holding under § 112, ¶ 2, and this holding is therefore reversed.

as to enable any person skilled in the art to which it pertains . . . to make and use the same . . ." 35 U.S.C. § 112, ¶ 1 (1994).

¹⁵ See Initial Determination at 164 ("[T]he administrative law judge finds that the '277 specification does not provide reasonable detail for the 'digital detector' elements . . . and that the written description of the '277 patent specification does not communicate what is needed to enable one of ordinary skill in the art to understand and carry out the inventions of the claims in issue."). However, the Commission did not rely on this ground in support of its determination, and consequently PMC did not argue the merits of this ground in its appeal to us. See note 3, supra, and accompanying text.

C. Infringement

1. Claims 6 and 7

We understand PMC to make two arguments concerning infringement of claims 6 and 7. PMC's first argument is that the ALJ erred in construing the term "location" to preclude selection of a control signal based on selection of a particular carrier wave in a multi-carrier transmission. After considering the claim language and those portions of the specification cited to us by PMC, we disagree with PMC that the ALJ misconstrued the term "location." Without going into unnecessary detail, we note that the term "location" in claims 6 and 7 refers to the position of a control signal within a "television program transmission," and that the specification uses this phrase to denote a single transmission enveloped within a single carrier wave. The specification does not suggest that a "television program transmission" can be a multi-channel transmission, as PMC contends in support of its claim construction. The ALJ correctly construed the term "location" in accordance with the examples provided in the specification, viz., a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission, see '277 patent, col. 9, l. 61 to col. 10, l. 16, examples which involve only single channel transmissions.

PMC's second argument is that the ALJ erred in concluding that the use of SCIDs in the accused DSSs did not infringe claims 6 and 7. We understand this argument not as an attack on the ALJ's claim construction, but rather as an argument that substantial evidence does not support the finding of noninfringement. Specifically, PMC attacks the ALJ's characterization of the SCID as a "composition" and not as having a "location," and asserts that these two characterizations are not mutually

exclusive. In other words, PMC contends that even if the SCID constitutes "composition" information, it also has a location within a given channel. The Commission responds that the ALJ's distinction between the terms "composition" and "location" is meaningful and precludes infringement of both claims.

We agree with PMC that substantial evidence does not support the ALJ's conclusion that the accused DSSs do not infringe claim 7, but disagree with PMC as to claim 6. Like PMC, we find the distinction between the terms "composition" and "location" to be irrelevant to the question whether the SCID can constitute the control signal (i.e., the "predetermined signal" of claim 6 or the "specific signal" of claim 7) of the claims. This was the ALJ's only reason for not finding infringement.¹⁶ Moreover, the ALJ's rationale that the terms "location" and "composition" should be interpreted differently because of the separate use of those terms in claim 7, if anything, suggests that claim 7 is infringed, because that claim encompasses detection of a control signal that is facilitated by a controller that is "programmed with information of the composition of said signal or with either the varying location or the varying timing pattern of said signal." '277 patent, claim 7 (emphasis added). Once the erroneous distinction between "location" and "composition" is removed from consideration, the ALJ's conclusion that claim 7 is not infringed is left without substantial evidentiary support. However, we are not prepared on this record to conclude that this claim is infringed.

¹⁶ "The [ALJ] finds that the SCID of the control word packets are information of the 'composition' of a signal, rather than its 'location' as required by claim 6. Thus, the accused DSS system identifies a 'predetermined signal' based on its carrier frequency, and the composition of the predetermined signal." Initial Determination at 228; see also id. at 231-32 (discussing claim 7).

Claim 7 contains many limitations whose relevance to the accused devices have not been made clear to us. We therefore conclude that the prudent course is not to reverse the finding of no infringement of claim 7, but rather to vacate that decision and remand it for further consideration by the Commission.¹⁷

Claim 6 presents a different set of facts. Unlike claim 7, the controller of claim 6 is more narrowly drawn to a controller "programmed with either the varying locations or the varying timing pattern of said signal." '277 patent, claim 6. As noted earlier, the controllers in the accused DSSs are programmed with the SCIDs, which are compared with the SCIDs of the incoming data streams to locate a match.¹⁸ Thus, the controllers are not programmed with the "varying location or timing pattern of said signal"; they are programmed with the signal itself, and therefore do not infringe. We therefore affirm the ALJ's conclusion that claim 6 is not infringed.

¹⁷ We again acknowledge that the Commission has not yet reviewed the ALJ's conclusions that claim 7 is invalid as anticipated under 35 U.S.C. § 102 and as not enabled under 35 U.S.C. § 112, ¶ 1. It was the Commission's prerogative to review only the questions of indefiniteness and noninfringement, and indeed such an approach "may often save the Commission, the parties and this court substantial unnecessary effort." Beloit Corp. v. Valmet OY, 742 F.2d 1421, 1423, 223 USPQ 193, 194 (Fed. Cir. 1984). However, "[l]ike many good things, that approach carries a risk—here the risk of a reversal, and a consequent need for the Commission to revisit one or more portions of the initial determination on which it had taken no position." Id.

¹⁸ "The microprocessor [i.e., controller] will utilize the Program Guide and obtain the transponder frequency and SCID or SCIDs of the channel that the user selected. The microprocessor will program the tuner with the frequency of the desired data stream and then program the transport chip to start filtering for data packets that contain one of those particular SCIDs. The transport chip examines the SCID of every packet and compares it to the SCID or SCIDs of the selected channel. If the SCIDs match, the transport chip will direct the data of that packet to the appropriate place . . . for further processing." Initial Determination at 228 (quoting testimony of Kepley).

2. Claim 44

PMC's last argument is that the ALJ erred in concluding that the accused DSSs did not infringe claim 44. Specifically, PMC takes issue with the ALJ's implicit conclusion that the claimed "mass medium transmission" which creates the video overlay and the claimed "television transmission" are separate and discrete transmissions. PMC contends that the DSS broadcast meets both of these limitations when the DSS system is displaying the video overlay. PMC points out that even though the television is not receiving a traditional television broadcast at the time that the DSS broadcast is being received, the DSS broadcast is modulated at each given receiver. Accordingly, PMC contends that this internally-modulated signal constitutes the "television transmission" of the claim. The Commission responds, *inter alia*, that PMC cannot make this argument on appeal to this court because it was not included in its petition to the Commission.

We agree with the Commission and decline to consider PMC's "internally-modulated" argument. A review of PMC's petition reveals that its argument to the Commission centered around the following claim limitation: "a television receiver for receiving a selected broadcast or cablecast television transmission and transferring television programming in said transmission to a television display." PMC argued that the claim language following "a television receiver for" merely "defined the qualities (or capabilities) of the television receiver," PMC's Petition for Review at 29, and therefore should not limit the claim. It summarized its argument as follows: "Thus, when [the claim] is read in light of the specification, it's clear that the 'for' clauses in the claim should be interpreted as defining capabilities of the preceding structural elements, and

not additional structural elements required by this claim." PMC's Petition for Review at 30. Nothing even remotely approaching PMC's "internally-modulated" argument appears in the petition to the Commission. Because this argument was not raised in PMC's petition, we may not consider it on appeal. See Checkpoint Sys., Inc. v. United States Int'l Trade Comm'n, 54 F.3d 756, 760, 35 USPQ2d 1042, 1045-46 (Fed. Cir. 1995). PMC is incorrect that by raising the issue of infringement in its petition that it may now assert any argument in support of its position on that issue. See id. at 760, 35 USPQ2d at 1046 (holding that this court would not address a party's claim construction argument simply because that party had included "other claim construction defects" in its petition for review). Because PMC's "internally-modulated" argument concerning infringement of claim 44 was not "specifically asserted" in its petition for review, see id., we do not consider its merits.

CONCLUSION

The Commission erred in concluding that the "digital detector" limitations in the asserted claims rendered these claims invalid for indefiniteness under § 112, ¶ 2. The Commission also erred in concluding that claim 7 was not infringed, and we vacate this ruling and remand for further consideration of this issue. The Commission, however, did not err in concluding that claim 6 was not infringed. We decline to address PMC's argument in support of infringement of claim 44 because it was not raised below. The decision of the Commission is therefore

AFFIRMED-IN-PART, REVERSED-IN-PART, VACATED-IN-PART and REMANDED.

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

In the Matter of

CERTAIN DIGITAL SATELLITE
SYSTEM (DSS) RECEIVERS AND
COMPONENTS THEREOF

Inv. No. 337-TA-392

Office of the Secretary
U.S. International Trade Commission
May 13, 1998
P.M. 1:45

00042

**NOTICE OF COMMISSION DECISION TO TERMINATE THE INVESTIGATION AND
TO VACATE PORTIONS OF INITIAL DETERMINATION**

AGENCY: U.S. International Trade Commission

ACTION: Notice

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined to grant complainant's motion to terminate the investigation, to grant complainant's motion to vacate the final initial determination (ID) of the presiding administrative law judge (ALJ) on the issues of invalidity for anticipation and for lack of enablement, and to deny the motion to vacate in all other respects.

FOR FURTHER INFORMATION CONTACT: John A. Wasleff, Esq., Office of the General Counsel, U.S. International Trade Commission, telephone 202-205-3094. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-205-1810. General information concerning the Commission may also be obtained by accessing its Internet server (<http://www.usitc.gov>).

SUPPLEMENTAL INFORMATION:

This investigation was instituted on December 18, 1996, based on a complaint filed by Personalized Media Communications, LLC (PMC). 61 Fed. Reg. 66695-96. The respondents are DirectTV, Inc., United Satellite Broadcasting Co., Hughes Network Systems, Hitachi Home Electronics (America), Inc., Thomson Consumer Electronics, Inc., Toshiba America Consumer Products, Inc., and Matsushita Electric Corporation of America. The complaint alleges, *inter alia*, that respondents engaged in unlawful activities in violation of section 337 through the unlicensed importation and sale of goods infringing claim 1-7 of U.S. Letters Patent 5,335,277.

On October 20, 1997, the presiding ALJ issued a final ID in which he concluded that the asserted claims were invalid as indefinite under 35 U.S.C. § 112 ¶2, that the asserted claims were invalid as not enabled under 35 U.S.C. § 112 ¶1, that claim 7 is invalid as anticipated under 35 U.S.C. § 102, and that no asserted claim was infringed. The Commission adopted the ALJ's claim

constructions, his finding of invalidity for indefiniteness, and his finding of no infringement, but took no position on the other invalidity findings.

The Commission's determination was appealed to the U.S. Court of Appeals for the Federal Circuit, and on November 24, 1998, the Federal Circuit issued its opinion on appeal. The Court's mandate issued on February 26, 1999. The Court upheld the Commission as to three of the four claims at issue on appeal. The Court reversed the Commission with respect to its determination that claim 7 of U.S. Letters Patent 5,335,277 is invalid for indefiniteness. The Court also vacated the Commission's determination that claim 7 is not infringed by the accused devices and remanded for further consideration by the Commission.

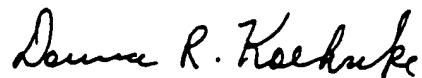
On March 26, 1999, complainant PMC filed a motion to terminate the investigation and vacate the ID. On April 5, 1999, several respondents filed a brief in opposition, in which the balance of the respondents joined. The Commission's Office of Unfair Import Investigations filed a response on April 7, 1999.

The Commission determined to grant the complainant's motion to terminate the investigation. The Commission further determined to grant complainant's motion to vacate the ID, but only with respect to the findings of invalidity for anticipation and lack of enablement, as to which findings the Commission took no position. The Commission determined to deny the motion to vacate in all other respects.

This action is taken under the authority of the Administrative Procedure Act (5 U.S.C. § 500 et. seq.), section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337), and section 210.41 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.41).

Copies of the Commission's order and all other nonconfidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street S.W., Washington, D.C. 20436, telephone 202-205-2000.

By order of the Commission.



Donna R. Koehnke
Secretary

Issued: May 13, 1999

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

In the Matter of

CERTAIN DIGITAL SATELLITE
SYSTEM (DSS) RECEIVERS AND
COMPONENTS THEREOF

Inv. No. 337-TA-392

ORDER

This investigation was instituted on December 18, 1996, based on a complaint filed by Personalized Media Communications, LLC (PMC). 61 Fed. Reg. 66695-96. The respondents are DirectTV, Inc., United Satellite Broadcasting Co., Hughes Network Systems, Hitachi Home Electronics (America), Inc., Thomson Consumer Electronics, Inc., Toshiba America Consumer Products, Inc., and Matsushita Electric Corporation of America. The complaint alleges, inter alia, that the respondents engaged in unlawful activities in violation of section 337 through the unlicensed importation and sale of goods infringing claim 1-7 of U.S. Letters Patent 5,335,277.

On October 20, 1997, the presiding administrative law judge (ALJ) issued a final initial determination (ID) in which he concluded that the asserted claims were invalid as indefinite under 35 U.S.C. § 112 ¶2, that the asserted claims were invalid as not enabled under 35 U.S.C. § 112 ¶1, that claim 7 is invalid as anticipated under 35 U.S.C. § 102, and that no asserted claim was infringed. The Commission adopted the ALJ's claim constructions, his finding of invalidity for indefiniteness, and

his finding of no infringement, but took no position on the other invalidity findings.¹

The Commission's determination was appealed to the U.S. Court of Appeals for the Federal Circuit, and on November 24, 1998, the Federal Circuit issued its opinion on appeal. The Court's mandate issued on February 26, 1999. The Court reversed the Commission with respect to its determination that claim 7 of U.S. Letters Patent 5,335,277 is invalid for indefiniteness. The Court also vacated the Commission's determination that claim 7 is not infringed by the accused devices and remanded the investigation to the Commission for further consideration of the issue of infringement of claim 7 by the Commission.

On March 26, 1999, complainant PMC filed a motion to terminate the investigation and vacate the ID. On April 5, several respondents filed a brief in opposition, in which the rest of the respondents joined. The Office of Unfair Import Investigations filed its response on April 7.

The Commission has determined to grant the motion to terminate the investigation. The Commission has further determined to deny the motion to vacate with respect to those findings in the ID that were affirmed by the Federal Circuit. The Commission has determined to grant the motion to vacate, however, with respect to the ALJ's findings of invalidity for anticipation and lack of enablement, as to which the Commission

¹ See *Beloit Corp. v. Valmet OY*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) (Commission may at its discretion review only certain dispositive issues resolved in the ID).

has taken no position.

Accordingly, it is hereby ORDERED THAT:

1. This investigation is terminated.
2. The motion to vacate the ID is granted as to the findings that the claims of U.S. Letters Patent 5,335,277 at issue are invalid for anticipation and for lack of enablement.
3. The motion to vacate the ID is denied in all other respects.
4. The Secretary shall serve copies of this Order on the parties of record, and publish notice thereof in the **Federal Register**.

By order of the Commission.



Donna R. Koehnke
Secretary

Issued: May 13, 1999

CERTAIN DIGITAL SATELITE SYSTEMS
RECEIVERS AND COMPONENTS THEREOF

337-TA-392

PUBLIC CERTIFICATE OF SERVICE

I, Donna R. Koehnke, hereby certify that the attached NOTICE OF COMMISSION DECISION TO TERMINATE THE INVESTIGATION AND TO VACATE PORTIONS OF INITIAL DETERMINATION was served upon the following parties via first class mail, and air mail where necessary, on May 14, 1999.

Donna R. Koehnke

Donna R. Koehnke, Secretary
U.S. International Trade
Commission
500 E Street, S.W., Rm. 112
Washington, D.C. 20436

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Corporation of America:

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CERTAIN DIGITAL SATELITE SYSTEMS
RECEIVERS AND COMPONENTS THEREOF

337-TA-392

PUBLIC CERTIFICATE OF SERVICE

Page Two

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Inc., Hitachi Home Electronics
(America), Inc., and DIRECTV:

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Investigations
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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

In the Matter of

CERTAIN DIGITAL SATELLITE
SYSTEM (DSS) RECEIVERS AND
COMPONENTS THEREOF

Inv. No. 337-TA-392

49 MAY 13 P 3:45

RECEIVED
U.S. PATENT AND TRADEMARK OFFICE
MAY 13 2006
10042

**NOTICE OF COMMISSION DECISION TO TERMINATE THE INVESTIGATION AND
TO VACATE PORTIONS OF INITIAL DETERMINATION**

AGENCY: U.S. International Trade Commission

ACTION: Notice

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined to grant complainant's motion to terminate the investigation, to grant complainant's motion to vacate the final initial determination (ID) of the presiding administrative law judge (ALJ) on the issues of invalidity for anticipation and for lack of enablement, and to deny the motion to vacate in all other respects.

FOR FURTHER INFORMATION CONTACT: John A. Wasleff, Esq., Office of the General Counsel, U.S. International Trade Commission, telephone 202-205-3094. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-205-1810. General information concerning the Commission may also be obtained by accessing its Internet server (<http://www.usitc.gov>).

SUPPLEMENTAL INFORMATION:

This investigation was instituted on December 18, 1996, based on a complaint filed by Personalized Media Communications, LLC (PMC). 61 Fed. Reg. 66695-96. The respondents are DirectTV, Inc., United Satellite Broadcasting Co., Hughes Network Systems, Hitachi Home Electronics (America), Inc., Thomson Consumer Electronics, Inc., Toshiba America Consumer Products, Inc., and Matsushita Electric Corporation of America. The complaint alleges, *inter alia*, that respondents engaged in unlawful activities in violation of section 337 through the unlicensed importation and sale of goods infringing claim 1-7 of U.S. Letters Patent 5,335,277.

On October 20, 1997, the presiding ALJ issued a final ID in which he concluded that the asserted claims were invalid as indefinite under 35 U.S.C. § 112 ¶2, that the asserted claims were invalid as not enabled under 35 U.S.C. § 112 ¶1, that claim 7 is invalid as anticipated under 35 U.S.C. § 102, and that no asserted claim was infringed. The Commission adopted the ALJ's claim

constructions, his finding of invalidity for indefiniteness, and his finding of no infringement, but took no position on the other invalidity findings.

The Commission's determination was appealed to the U.S. Court of Appeals for the Federal Circuit, and on November 24, 1998, the Federal Circuit issued its opinion on appeal. The Court's mandate issued on February 26, 1999. The Court upheld the Commission as to three of the four claims at issue on appeal. The Court reversed the Commission with respect to its determination that claim 7 of U.S. Letters Patent 5,335,277 is invalid for indefiniteness. The Court also vacated the Commission's determination that claim 7 is not infringed by the accused devices and remanded for further consideration by the Commission.

On March 26, 1999, complainant PMC filed a motion to terminate the investigation and vacate the ID. On April 5, 1999, several respondents filed a brief in opposition, in which the balance of the respondents joined. The Commission's Office of Unfair Import Investigations filed a response on April 7, 1999.

The Commission determined to grant the complainant's motion to terminate the investigation. The Commission further determined to grant complainant's motion to vacate the ID, but only with respect to the findings of invalidity for anticipation and lack of enablement, as to which findings the Commission took no position. The Commission determined to deny the motion to vacate in all other respects.

This action is taken under the authority of the Administrative Procedure Act (5 U.S.C. § 500 et. seq.), section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337), and section 210.41 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.41).

Copies of the Commission's order and all other nonconfidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street S.W., Washington, D.C. 20436, telephone 202-205-2000.

By order of the Commission.



Donna R. Koehnke
Secretary

Issued: May 13, 1999

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

In the Matter of

CERTAIN DIGITAL SATELLITE
SYSTEM (DSS) RECEIVERS AND
COMPONENTS THEREOF

Inv. No. 337-TA-392

ORDER

This investigation was instituted on December 18, 1996, based on a complaint filed by Personalized Media Communications, LLC (PMC). 61 Fed. Reg. 66695-96. The respondents are DirectTV, Inc., United Satellite Broadcasting Co., Hughes Network Systems, Hitachi Home Electronics (America), Inc., Thomson Consumer Electronics, Inc., Toshiba America Consumer Products, Inc., and Matsushita Electric Corporation of America. The complaint alleges, inter alia, that the respondents engaged in unlawful activities in violation of section 337 through the unlicensed importation and sale of goods infringing claim 1-7 of U.S. Letters Patent 5,335,277.

On October 20, 1997, the presiding administrative law judge (ALJ) issued a final initial determination (ID) in which he concluded that the asserted claims were invalid as indefinite under 35 U.S.C. § 112 ¶2, that the asserted claims were invalid as not enabled under 35 U.S.C. § 112 ¶1, that claim 7 is invalid as anticipated under 35 U.S.C. § 102, and that no asserted claim was infringed. The Commission adopted the ALJ's claim constructions, his finding of invalidity for indefiniteness, and

his finding of no infringement, but took no position on the other invalidity findings.¹

The Commission's determination was appealed to the U.S. Court of Appeals for the Federal Circuit; and on November 24, 1998, the Federal Circuit issued its opinion on appeal. The Court's mandate issued on February 26, 1999. The Court reversed the Commission with respect to its determination that claim 7 of U.S. Letters Patent 5,335,277 is invalid for indefiniteness. The Court also vacated the Commission's determination that claim 7 is not infringed by the accused devices and remanded the investigation to the Commission for further consideration of the issue of infringement of claim 7 by the Commission.

On March 26, 1999, complainant PMC filed a motion to terminate the investigation and vacate the ID. On April 5, several respondents filed a brief in opposition, in which the rest of the respondents joined. The Office of Unfair Import Investigations filed its response on April 7.

The Commission has determined to grant the motion to terminate the investigation. The Commission has further determined to deny the motion to vacate with respect to those findings in the ID that were affirmed by the Federal Circuit. The Commission has determined to grant the motion to vacate, however, with respect to the ALJ's findings of invalidity for anticipation and lack of enablement, as to which the Commission

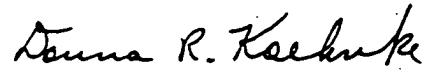
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has taken no position.

Accordingly, it is hereby ORDERED THAT:

1. This investigation is terminated.
2. The motion to vacate the ID is granted as to the findings that the claims of U.S. Letters Patent 5,335,277 at issue are invalid for anticipation and for lack of enablement.
3. The motion to vacate the ID is denied in all other respects.
4. The Secretary shall serve copies of this Order on the parties of record, and publish notice thereof in the *Federal Register*.

By order of the Commission.



Donna R. Koehnke
Secretary

Issued: May 13, 1999

CERTAIN DIGITAL SATELITE SYSTEMS
RECEIVERS AND COMPONENTS THEREOF

337-TA-392

PUBLIC CERTIFICATE OF SERVICE

I, Donna R. Koehnke, hereby certify that the attached NOTICE OF COMMISSION DECISION TO TERMINATE THE INVESTIGATION AND TO VACATE PORTIONS OF INITIAL DETERMINATION was served upon the following parties via first class mail, and air mail where necessary, on May 14, 1999.

Donna R. Koehnke

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CERTAIN DIGITAL SATELITE SYSTEMS
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Smith Brittingham, Esq.
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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

PEGASUS DEVELOPMENT CORPORATION)	
and PERSONALIZED MEDIA)	
COMMUNICATIONS, LLC,)	
)	
Plaintiffs,)	
)	
v.)	C.A. No. 00-1020 (GMS)
)	
DIRECTV, INC., HUGHES ELECTRONICS)	
CORPORATION, THOMSON CONSUMER)	
ELECTRONICS, INC., and PHILIPS ELECTRONICS)	
NORTH AMERICA CORPORATION,)	
)	
Defendants, and)	
)	
THOMSON MULTIMEDIA INC.,)	
)	
Counterplaintiff,)	
)	
v.)	
)	
PEGASUS DEVELOPMENT CORPORATION,)	
PERSONALIZED MEDIA COMMUNICATIONS,)	
L.L.C., TVG-PMC, INC., STARSIGHT TELECAST,)	
INC., and GEMSTART-TV GUIDE)	
INTERNATIONAL, INC.)	
)	
Counterdefendants)	
)	

**REPORT AND RECOMMENDATION
OF SPECIAL MASTER
REGARDING CLAIM CONSTRUCTION**

This case involves an assertion of infringement by defendants of six U.S. patents owned or controlled by plaintiffs. The patents relate generally to communications control systems, and,

a little more specifically, to computer control of television program distribution systems. There are many, many facets to the systems disclosed in the patents in suit. Indeed, plaintiffs have filed well over 300 patent applications, each presumably claiming distinct inventions, based upon their original patent application filed in 1981, as supplemented by a continuation-in-part application filed in 1987. The 1987 application expanded the original 1981 application from 22 to over 300 columns of patent text and is, by any measure, an extremely complex document.¹ Any effort to characterize the separately patented inventions except by reference to the actual claims of the patents is not apt to prove fruitful.

In an Order dated February 5, 2003, the Court appointed the undersigned as Special Master (SM) pursuant to Rule 53, FRCP. The specific purpose of the reference was to make "recommendations to the Court regarding the construction of the claim terms at issue." The SM was directed to "conduct a Markman hearing" and to issue a "Markman report."² The SM was empowered to "request and consider expert testimony or other extrinsic evidence as he deems appropriate."

Pursuant to the Order, the parties on January 27, 2003 submitted claim construction charts that identified disputed claim terms and the meaning ascribed to those terms by the respective parties. Copious briefing³ followed, with opening briefs on February 18-19 and responsive briefs on March 10, 2003. The briefs were accompanied by massive declarations and

¹ As one of the many patent examiners involved in the prosecution of these applications was moved to complain, "the amount of effort that is required to read and absorb much/most/all of applicant's original 1987 disclosure represents nothing less than an unpleasant and difficult task." Broderick Declaration ¶9.

² See Markman v. Westview Instr., Inc., 52 F.3d 967, 34 USPQ2d 1321 (Fed. Cir. 1995), aff'd 517 U.S. 370, 38 USPQ2d 1461 (1996).

³ Defendants in their opening salvo filed a separate joint memorandum for each of the six patents in suit, with a total of 173 pages. Not to be outdone, at least by much, plaintiffs filed a single brief of 164 pages. In responsive briefing, the plaintiffs submitted 111 pages and the defendants 128. These 576 pages of briefs are generally cited in this report like this: Defendants' initial brief on, e.g., the '414 patent (DIB '414 p. __); defendants' reply brief (DRB '414 p. __); plaintiffs' initial (PIB p. __) and reply brief (PRB p. __).

documentary exhibits. At the request of the SM, the parties on March 3, 2003 submitted a joint claim chart setting forth their final proposed definitions for various contested claim limitations.⁴

A hearing was held in Miami, Florida on March 19-20, 2003. The parties presented the testimony of expert witnesses and attorney argument. Upon full consideration of all matters raised during those proceedings, this report is respectfully submitted in response to the Court's directive to recommend a construction of the claims of the patents in suit.

GOVERNING LEGAL PRINCIPLES

The Legal Framework for Claim Construction

Proper claim construction necessarily precedes a determination of whether the claims read on the accused devices or methods for infringement purposes.⁵ Indeed, claim construction will normally control the remainder of the decisional process,⁶ for it is axiomatic that the claims must be construed in the same way for infringement that they are for determining validity.⁷

In the Markman⁸ case, supra, the Supreme Court held that interpretation of patent claims is a question for the court, while application of properly construed claims to determine infringement is a question for the finder of fact. In Bell v. Covad,⁹ the Federal Circuit summarized its current approach to claim construction: It looks first to the claim language itself to define the scope of the patented invention. As a starting point, it gives claim terms their ordinary and accustomed meaning as understood by one of ordinary skill in the art. Accordingly, a technical term used in a patent is interpreted as having the meaning a person of ordinary skill in

⁴ That 65-page document is cited to herein as "Joint Chart."

⁵ E.g., Fonar Corp. v. Johnson & Johnson, 821 F.2d 627, 3 USPQ2d 1109, 1112 (Fed. Cir. 1987)

⁶ Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1 USPQ2d 1593, 1597 (Fed. Cir. 1987).

⁷ E.g., Intervet America, Inc. v. Kee-Vet Labs., Inc., 887 F.2d 1050, 12 USPQ2d 1474, 1476 (Fed. Cir. 1989).

⁸ See note 2.

⁹ Bell Atl. Network Serv. Inc. v. Covad Comm. Group Inc., 262 F.3d 1258, 59 USPQ2d 1865, 1870-71 (Fed. Cir. 2001).

the field of the invention would understand it to mean. Generally, there is a heavy presumption in favor of the ordinary meaning of claim language as understood by one of ordinary skill in the art. This presumption is overcome: (1) where the patentee has chosen to be his or her own lexicographer, or (2) where a claim term deprives the claim of clarity such that there is no means by which the scope of the claim may be ascertained from the language used. In the first situation, a patentee may choose to be his or her own lexicographer and use terms in a manner other than their ordinary meaning. Therefore, the court must examine the intrinsic evidence to determine whether the patentees have given the term an unconventional meaning. The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication. Thus, the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term. In redefining the meaning of particular claim terms away from the ordinary meaning, the intrinsic evidence must clearly set forth or clearly redefine a claim term so as to put one reasonably skilled in the art on notice that the patentee intended to so redefine the claim term. The specification must exhibit an express intent to impart a novel meaning to claim terms. However, a claim term may be clearly redefined without an explicit statement of redefinition. Indeed, the written description of the preferred embodiments can provide guidance as to the meaning of the claims, thereby dictating the manner in which the claims are to be construed, even if the guidance is not provided in explicit definitional format. In other words, the specification may define claim terms by implication such that the meaning may be found in or ascertained by a reading of the patent documents. Moreover, one must also examine the prosecution history to determine whether the patentee has relinquished a potential claim construction in an amendment to the claim or in an argument to overcome or distinguish a reference. This history contains the

complete record of all the proceedings before the PTO, including any express representations made by the applicant regarding the scope of the claims. The prosecution history is considered to determine whether or not there were any express representations made in obtaining the patent regarding the scope and meaning of the claims. Finally, if the meaning of the claim limitation is apparent from the intrinsic evidence alone, it is improper to rely on extrinsic evidence other than that used to ascertain the ordinary meaning of the claim limitation. However, in the rare circumstance that the court is unable to determine the meaning of the asserted claims after assessing the intrinsic evidence, it may look to additional evidence that is extrinsic to the complete document record to help resolve any lack of clarity. This additional extrinsic evidence includes such evidence as expert testimony, articles, and inventor testimony. This extrinsic evidence may be used only to assist in the proper understanding of the disputed limitation; it may not be used to vary, contradict, expand, or limit the claim language from how it is defined, even by implication, in the specification or file history.

In Bell v. Covad, the court explained its attitude toward dictionaries and treatises like this:

Dictionaries and technical treatises, which are extrinsic evidence, hold a "special place" and may sometimes be considered along with the intrinsic evidence when determining the ordinary meaning of claim terms. * * * Furthermore, we have previously cautioned against the use of non-scientific dictionaries "lest dictionary definitions ... be converted into technical terms of art having legal, not linguistic significance."¹⁰

More recently, however, in Texas Digital v. Telegenix,¹¹ the court expanded on the use of such resources: When a patent is granted, prosecution is concluded, the intrinsic record is fixed, and the public is placed on notice of its allowed claims. Dictionaries, encyclopedias and treatises, publicly available at the time the patent is issued, are objective resources that serve as reliable

¹⁰ 59 USPQ2d at 1870.

¹¹ Texas Digital Sys. Inc. v. Telegenix Inc., 308 F.3d 1193, 64 USPQ2d 1812, 1818-20 (Fed. Cir. 2002).

sources of information on the established meanings that would have been attributed to the terms of the claims by those of skill in the art. Such references are unbiased reflections of common understanding not influenced by expert testimony or events subsequent to the fixing of the intrinsic record by the grant of the patent, not colored by the motives of the parties, and not inspired by litigation. Indeed, these materials may be the most meaningful sources of information to aid judges in better understanding both the technology and the terminology used by those skilled in the art to describe the technology. As resources and references to inform and aid courts and judges in the understanding of technology and terminology, it is entirely proper for both trial and appellate judges to consult these materials at any stage of a litigation, regardless of whether they have been offered by a party in evidence or not. Thus, categorizing them as "extrinsic evidence" or even a "special form of extrinsic evidence" is misplaced and does not inform the analysis.

The Texas Digital opinion goes on to examine the relationship of dictionary definitions to the intrinsic patent record. Thus, because words often have multiple dictionary definitions, some having no relation to the claimed invention, the intrinsic record must always be consulted to identify which of the different possible dictionary meanings of the claim terms in issue is most consistent with the use of the words by the inventor. If more than one dictionary definition is consistent with the use of the words in the intrinsic record, the claim terms may be construed to encompass all such consistent meanings. The objective and contemporaneous record provided by the intrinsic evidence is the most reliable guide to help the court determine which of the possible meanings of the terms in question was intended by the inventor to particularly point out and distinctly claim the invention. Moreover, the intrinsic record also must be examined in every case to determine whether the presumption of ordinary and customary meaning is rebutted.

Indeed, the intrinsic record may show that the specification uses the words in a manner clearly inconsistent with the ordinary meaning reflected, for example, in a dictionary definition. In such a case, the inconsistent dictionary definition must be rejected. In short, the presumption in favor of a dictionary definition will be overcome where the patentee, acting as his or her own lexicographer, has clearly set forth an explicit definition of the term different from its ordinary meaning. Further, the presumption also will be rebutted if the inventor has disavowed or disclaimed scope of coverage, by using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.

Finally, the Texas Digital opinion cautions against consulting the intrinsic record prior to attempting an initial determination of ordinary meaning. Consulting the written description and prosecution history as a threshold step in the claim construction process, before any effort is made to discern the ordinary and customary meanings attributed to the words themselves, invites a violation of precedent counseling against importing limitations into the claims. For example, if an invention is disclosed in the written description in only one exemplary form or in only one embodiment, the risk of starting with the intrinsic record is that the single form or embodiment so disclosed will be read to require that the claim terms be limited to that single form or embodiment. Indeed, one can easily be misled to believe that this is precisely what precedent requires when it informs that disputed claim terms should be construed in light of the intrinsic record. But if the meaning of the words themselves would not have been understood to persons of skill in the art to be limited only to the examples or embodiments described in the specification, reading the words in such a confined way would mandate the wrong result and would violate the proscription against reading limitations from the specification into the claims. By examining relevant dictionaries, encyclopedias and treatises to ascertain possible meanings

that would have been attributed to the words of the claims by those skilled in the art, and by further utilizing the intrinsic record to select from those possible meanings the one or ones most consistent with the use of the words by the inventor, the full breadth of the limitations intended by the inventor will be more accurately determined and the improper importation of unintended limitations from the written description into the claims will be more easily avoided.

As indicated, the parties, at the invitation of the SM, presented expert testimony during the Markman hearing in this case. Indeed, the SM frequently participated in the interrogation of the experts. Nonetheless, in considering the evidence adduced through these witnesses, the SM was constantly mindful of the Federal Circuit's clear direction in Bell & Howell Doc. Man. Prod. Co. v. Altek Sys., 132 F.3d 701, 45 USPQ2d 1033, 1038 (Fed. Cir. 1998):

Once a dispute over claim construction arises, "experts" should also not be heard to inject a new meaning into terms that is inconsistent with what the inventor set forth in his or her patent and communicated, first to the patent Examiner and ultimately to the public. Patents should be interpreted on the basis of their intrinsic record, not on the testimony of such after-the-fact "experts" that played no part in the creation and prosecution of the patent. * * * Use of expert testimony to explain an invention may be useful. But reliance on extrinsic evidence to interpret claims is proper only when the claim language remains genuinely ambiguous after consideration of the intrinsic evidence, *Vitronics*, 90 F.3d at 1584, 39 USPQ2d at 1578, i.e., when the intrinsic evidence is "insufficient to enable the court to construe disputed claim terms." Id. at 1585, 39 USPQ2d at 1579. Accordingly, any expert testimony that is inconsistent with unambiguous intrinsic evidence should be accorded no weight. * * *

The court also pointed out that "the testimony of an inventor often is a self-serving, after-the-fact attempt to state what should have been part of his or her patent application." Id.¹²

¹² Although in Markman the Federal Circuit stated that "the subjective intent of the inventor when he used a particular term is of little or no probative weight in determining the scope of a claim," this statement does not disqualify the inventor as a witness, or overrule the large body of precedent that recognizes the value of the inventor's testimony. Markman did not hold that the inventor cannot explain the technology and what was invented and claimed; the Federal Circuit held only that the inventor can not by later testimony change the invention and the claims from their meaning at the time the patent was drafted and granted. Patents are written not for laymen, but for and by persons experienced in the field of the invention. An inventor is a competent witness to explain the invention and what was intended to be conveyed by the specification and covered by the claims. The testimony of the inventor may also provide background information, including explanation of the problems that existed at the time the invention was made and the inventor's solution to these problems. Though Markman and other precedent caution the

These admonitions have conditioned the methodology employed in this proceeding. The SM made every effort to ascertain the ordinary meaning of the disputed claim terms before consulting the written description and prosecution history. Only then were those intrinsic patent documents examined to determine whether there was a clear inconsistency with ordinary meaning or a clear disavowal of claim scope.

Likewise, the parties have submitted extrinsic evidence, and the SM has considered all such evidence. An important consideration in this respect was explained by the Federal Circuit in a recent case in this way:

While reference to intrinsic evidence is primary in interpreting claims, the criterion is the meaning of words as they would be understood by persons in the field of the invention. Patent documents are written for persons familiar with the relevant field; the patentee is not required to include in the specification information readily understood by practitioners, lest every patent be required to be written as a comprehensive tutorial and treatise for the generalist, instead of a concise statement for persons in the field. Thus resolution of any ambiguity arising from the claims and specification may be aided by extrinsic evidence of usage and meaning of a term in the context of the invention.¹³

In the end, however, apart from whatever benefit this evidence may have provided in gaining an understanding of the technology at hand, and in determining whether a particular term has a well-recognized meaning in the art, it has not been relied upon in construing the claims unless specifically so indicated.¹⁴

court against creative reconstruction of an invention by interested persons, courts are not novices in receiving and weighing expertise on both sides of an issue. Voice Tech. Group Inc. v. VMC Sys. Inc., 164 F.3d 605, 49 USPQ2d 1333, 1340-41 (Fed. Cir. 1999).

¹³ Verve LLC v. Crane Cams Inc., 311 F.3d 1116, 65 USPQ2d 1051, 1053-54 (Fed. Cir. 2002).

¹⁴ See Mantech Environmental Corp. v. Hudson Environmental Serv. Inc., 152 F.3d 1368, 47 USPQ2d 1732, 1737 (Fed. Cir. 1998), where the Federal Circuit held that "the district court was legally correct both in admitting and accepting the testimony of the parties' expert witnesses 'for the purpose of background in the technical area at issue,' *** and then basing its claim construction solely upon intrinsic evidence. Although this information always may be admitted by the trial court to educate itself about the patent and the relevant technology, the claims and the written description remain the primary and more authoritative sources of claim construction. Thus, they always must be considered and where clear must be followed." See also Key Pharm. Inc. v. Hercon Labs. Corp., 161 F.3d 709, 48 USPQ2d 1911 (Fed. Cir. 1998).

The SM is also mindful of the admonition of the Federal Circuit that "claim construction is not an obligatory exercise in redundancy," and that it is unnecessary to repeat or restate every claim term in order to comply with the Markman directive that claim construction is a matter for the court.¹⁵ Thus, where terms are expressly defined in the patent specification, it is sufficient simply to refer to that definition; the Court can decide at the time of trial whether explanatory technical testimony would be necessary or, indeed, helpful at all. And where a term is not defined or used in a special way in the specification, and is otherwise unambiguous, a jury will give the term its ordinary meaning and will presumably require no additional assistance. Certainly it is not required, for each word in a claim, to consult several dictionaries in an attempt to find a synonym that harmonizes each definition. Where the parties themselves are not able to demonstrate that dictionaries set forth conflicting or inconsistent definitions, it would not be useful for the court to expound – at the risk of confounding – the ordinary meaning of a word.

It is also important to understand that claim construction is an obligation of the court that is independent of the views asserted by the adversary parties.¹⁶ Among them, the parties have requested consideration and construction of many, but not all, of the limitations of the claims of the patent in suit. The SM has considered each claim as a whole, and each limitation of each claim, and has recommended a specific interpretation of those terms and phrases, and only those terms and phrases, that require construction. Accordingly, to the extent various claim limitations are not addressed in this report, it may be assumed that the SM is recommending that they be grouped in the category of claim elements that need no construction. Similarly, this report is not to be viewed as reflecting an acceptance or endorsement by the SM of any proposed construction of either party, unless it expressly so states. Once again, if the report is silent as to a particular

¹⁵ United States Surgical Corp. v. Ethicon, Inc., 103 F.3d 1554, 41 USPQ2d 1225, 1236 (Fed. Cir. 1997).

¹⁶ Exxon Chem. Patents Inc. v. Lubrizol Corp., 64 F.3d 1553, 35 USPQ 1801, 1802 (Fed. Cir. 1995).

limitation, that means only that the SM is suggesting that no construction is necessary, regardless of what a party may have offered as a proposed construction.

An additional word of explanation is in order regarding the claim construction methodology as it relates to ordinary meaning. Typically, when a claim term is given its ordinary meaning, it is neither required nor desirable to restate that meaning in different words. All too often that approach confuses rather than illuminates. In the present case, however, the parties in many instances argue vigorously and at length over what the ordinary meaning of a term really is. The SM has considered each such instance and, in a few of them, has concluded that the jury might be assisted rather than confused by expounding the ordinary meaning.

Means-Plus-Function Elements under 35 U.S.C. §112¶6

Pursuant to 35 U.S.C. §112¶6, “[a]n element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” An element of a claim described as a means for performing a function, if read literally, would encompass any means for performing the function. Section 112¶6 operates to cut back on the types of means that could literally satisfy the claim language to only the disclosed structure or acts and equivalents thereof.¹⁷ But unless there is a clear basis for it in the record, it is improper to limit a means-plus-function claim to the particular means set forth in the specification. Patentees are required to disclose in the specification some enabling means for accomplishing the function, but there is no requirement that applicants describe or predict every possible means of accomplishing

¹⁷ Johnston v. IVAC Corp., 885 F.2d 1574, 12 USPQ2d 1382, 1386 (Fed. Cir. 1989).

that function. The statute was written precisely to avoid a holding that a means-plus-function (MPF) limitation must be read to cover only the disclosed means.¹⁸ Accordingly, each MPF limitation will be construed to cover the actual structure or acts shown in the specification for accomplishing the recited function, and equivalents thereof.¹⁹

Whether or not particular language in a claim defines, as a matter of law, a MPF element is not always easy to tell. If the word "means" appears in a claim element in association with a function, the court presumes that §112 ¶6 applies. This presumption collapses, however, if the claim itself recites sufficient structure, material, or acts to perform the claimed function. Without the term "means," a claim element is presumed to fall outside MPF strictures. Once again, however, that presumption can collapse when an element lacking the term "means" nonetheless relies on functional terms rather than structure or material to describe performance of the claimed function.²⁰

It should be noted that neither party has addressed (at least in that context) certain terms that could arguably be regarded as MPF elements. As indicated above, it is not required that a court struggle to restate every claim element in order to discharge its claim construction duties. But one must also be mindful that the Federal Circuit regards claim interpretation as an obligation of the trial judge that is independent of the views asserted by the adversary parties. In other words, it is insufficient for the judge simply to choose between the asserted constructions

¹⁸ D.M.I., Inc. v. Deere & Co., 755 F.2d 1570, 225 USPQ 236, 238 (Fed. Cir. 1985). It is now clear that §112 ¶6 also may apply to method claims containing so-called step-plus-function language. O.I. Corp. v. Tekmar Co., 115 F.3d 1576, 42 USPQ2d 1777, 1781-82 (Fed. Cir. 1997).

¹⁹ The determination of equivalency under §112 ¶6 is not part of the claim construction exercise; rather, it is a question of fact. E.g., Carroll Touch, Inc. v. Electro Mech. Sys., Inc., 15 F.3d 1573, 27 USPQ2d 1836, 1840 (Fed. Cir. 1993). See also IMS Tech. Inc. v. Haas Automation Inc., 206 F.3d 1422, 54 USPQ2d 1129, 1134 (Fed. Cir. 2000). The Federal Circuit has very recently explained that a structural equivalent under §112 ¶6 must have been available at the time of the issuance of the claim. An equivalent structure or act under §112 ¶6 cannot embrace technology developed after the issuance of the patent because the literal meaning of a claim is fixed upon its issuance. Al-Site Corp. v. VSI Int'l Inc., 174 F.3d 1308, 50 USPQ2d 1161, 1168 (Fed. Cir. 1999).

²⁰ E.g., Micro Chem. Inc. v. Great Plains Chem. Co., 194 F.3d 1258, 52 USPQ2d 1258 (Fed. Cir. 1999).

of the parties without an independent analysis.²¹ If this is so, then it must also be so that the trial judge has an obligation to identify and resolve apparent claim construction issues even if the parties do not address them. Certainly, a concession does not relieve the court of its responsibility to interpret the claims as a matter of law. To interpret the claims, the court must decide the subsidiary question of whether the claim element disputed by the parties invokes §112 ¶6 in the first instance. Only by undertaking this inquiry can the court ensure consistency in statutory application.²² Accordingly, it is recommended that there be a resolution of all potential MPF issues at this stage of the case.

The Federal Circuit has held, unequivocally, that §112 ¶6 applies to method claims. As it pointed out in O.I. v. Tekmar,²³

The statute of course uses terms that might be viewed as having a similar meaning, namely, steps and acts. It refers to means and steps, which must be supported by structure, material, or acts. It does not state which goes with which. The word "means" clearly refers to the generic description of an apparatus element, and the implementation of such a concept is obviously by structure or material. We interpret the term "steps" to refer to the generic description of elements of a process, and the term "acts" to refer to the implementation of such steps. This interpretation is consistent with the established correlation between means and structure. In this paragraph, structure and material go with means, acts go with steps. Of course, as we have indicated, section 112, Para. 6, is implicated only when means plus function without definite structure are present, and that is similarly true with respect to steps, that the paragraph is implicated only when steps plus function without acts are present. The statute thus in effect provides that an element in a combination method or process claim may be recited as a step for performing a specified function without the recital of acts in support of the function. (Emphasis present.)

²¹ Exxon Chem. Patents, Inc. v. Lubrizol Corp., 64 F.3d 1553, 35 USPQ2d 1801, 1802 (Fed. Cir. 1995).

²² Rodime PLC v. Seagate Tech. Inc., 174 F.3d 1294, 50 USPQ2d 1429, 1434 (Fed. Cir. 1999). In addition, claim construction of a §112 ¶6 limitation includes identifying the claimed function and determining the corresponding structure or act in the specification, both of which are questions of law. IMS Tech. Inc. v. Haas Automation Inc., 206 F.3d 1422, 54 USPQ2d 1129, 1133 (Fed. Cir. 2000).

²³ O.I. Corp. v. Tekmar Co., 115 F.3d 1576, 42 USPQ2d 1777, 1781-82 (Fed. Cir. 1997).

Nonetheless, the Tekmar court concluded that the limitation in question was not in step-plus-function format and thus did not invoke §112¶6.²⁴ Indeed, it appears that the Federal Circuit has never applied §112¶6 to a method limitation.²⁵ It appears to be committed to a somewhat more rigid examination of whether a method limitation (as opposed to an apparatus limitation) is, as a matter of law, drafted in such a way that it clearly mirrors the statutory template. As it held in a very recent case,

Where the claim drafter has not signaled his intent to invoke § 112, paragraph 6 by using the “step[s] for” language, we are unwilling to resort to that provision to constrain the scope of coverage of a claim limitation without a showing that the limitation contains nothing that can be construed as an act. Method claims are commonly drafted, as in this case, by reciting the phrase “steps of” followed by a list of actions comprising the method claimed. An application of §112, paragraph 6 in the present circumstances would render the scope of coverage of these method claims uncertain and disrupt patentees’ settled expectations regarding the scope of their claims. * * * We thus hold that where a method claim does not contain the term “step[s] for,” a limitation of that claim cannot be construed as a step-plus-function limitation without a showing that the limitation contains no act.²⁶

In a concurring opinion in an earlier case,²⁷ Judge Rader observed that “[t]he difficulty of distinguishing acts from functions in step-plus-function claim elements, however, makes identifying step-plus-function claims inherently more problematic. This difficulty places a significant burden on the claim drafter to choose language with a definite and clear meaning. To invoke a presumption of Section 112, Para. 6 application, a claim drafter must use language that

²⁴ The court concluded that the limitation was lacking the required function associated with the step. It observed that if it were to construe every process claim containing steps described by an "ing" verb, such as passing, heating, reacting, etc., as a step-plus-function limitation, it would be limiting process claims in a manner never intended by Congress. Also, just because method claims "parallel" apparatus claims that contain MPF elements does not necessarily mean that the method claims must also be construed that way. Each claim must be independently reviewed in order to determine if it is subject to the requirements of §112¶6. See also Epcon Gas Sys. Inc. v. Bauer Compressors Inc., 279 F.3d 1022, 61 USPQ2d 1470, 1475 (Fed. Cir. 2002); Generation II Orthotics Inc. v. Medical Tech. Inc., 263 F.3d 1356, 59 USPQ2d 1919, 1929 (Fed. Cir. 2001).

²⁵ Cf. Seal-Flex Inc. v. Athletic Track & Court Constr., 172 F.3d 836, 50 USPQ2d 1225, 1229 (Fed. Cir. 1999).

²⁶ Masco Corp. v. United States, 303 F.3d 1316, 64 USPQ2d 1182, 1189 (Fed. Cir. 2002).

²⁷ Seal-Flex, *supra*, 50 USPQ2d at 1233.

expressly signals the recitation of a function as distinguished from an act." He proposed a framework for analysis that has been cited favorably²⁸ in later decisions:

In general terms, the "underlying function" of a method claim element corresponds to what that element ultimately accomplishes in relationship to what the other elements of the claim and the claim as a whole accomplish. "Acts," on the other hand, correspond to how the function is accomplished. Therefore, claim interpretation focuses on what the claim limitation accomplishes, i.e., it's [sic] underlying function, in relation to what is accomplished by the other limitations and the claim as a whole. If a claim element recites only an underlying function without acts for performing it, then Section 112, Para. 6 applies even without express step-plus-function language.

In sum, similar to means-plus-function claims, this court employs a straightforward analysis for identifying a step-plus-function claim. If the claim element uses the phrase "step for," then Section 112, Para. 6 is presumed to apply. Because the phrasing "step for" would appear to claim every possible act for performing the recited function, in keeping with Section 112, Para. 6, such a claim covers only the specific acts recited in the specification for performing that function, and equivalent acts. On the other hand, the term "step" alone and the phrase "steps of" tend to show that Section 112, Para. 6 does not govern that limitation. Accordingly, this court has similarly denied step-plus-function treatment to method claims which use the conventional "steps of" language.

Terms in a Claim's Preamble

Generally the preamble does not limit a claim.²⁹ However, statements appearing in the preamble may be necessary to give meaning to the claim and properly define the invention.³⁰ With all respect, this is not a particularly helpful formula for analysis. Indeed, the Federal Circuit itself has remarked that "[t]o say that a preamble is a limitation if it gives 'meaning to the claim' may merely state the problem rather than lead one to the answer."³¹ That court has struggled mightily to come up a workable framework for analyzing claim preambles. Its best effort to date has been to indicate that a preamble is not limiting "where a patentee defines a structurally

²⁸ See Masco Corp. v. United States, 303 F.3d 1316, 64 USPQ2d 1182, 1188-89 (Fed. Cir. 2002); Epcon Gas Sys. Inc. v. Bauer Compressors Inc., 279 F.3d 1022, 61 USPQ2d 1470, 1475 (Fed. Cir. 2002).

²⁹ E.g., DeGeorge v. Bernier, 768 F.2d 1318, 226 USPQ 758, 761 n.3 (Fed. Cir. 1985).

³⁰ E.g., Bell Comm. Research v. Vitalink Comm. Corp., 55 F.3d 615, 34 USPQ2d 1816, 1820 (Fed. Cir. 1995).

³¹ Corning Glass Works v. Sumitomo Elec. U.S.A. Inc., 868 F.2d 1251, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989).

complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.”³²

With one exception (plaintiffs contend that a term in the preamble of claim 14 of the ‘243 patent is not limiting), the parties have not seemed much troubled by such concerns. They have – each side – proposed definitions for words and phrases appearing the in claim preambles, without expressed consideration as to whether those words and phrases are limitations as a matter of law. There is a great temptation for the SM to conclude that, “if it doesn’t bother them, it doesn’t bother me.” Unfortunately, this could be viewed as a clear dereliction of the duty to construe the claims regardless of how the parties feel about them. Fortunately, on the other hand, in each instance (including ‘243 claim 14) that the parties are proffering definitions of preamble statements, the SM’s independent analysis has led to the conclusion that the terms in question are indeed limitations, in that they either provide antecedent basis for later limitations or are necessary to understanding the remainder of the claim.

Claim Definiteness Pursuant to 35 U.S.C. §112¶2

The second paragraph of 35 U.S.C. §112 provides that the patent specification “shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the application regards as his invention.” When the invention set forth in a claim is not what the patentee regarded as the invention, or is not set forth with sufficient definiteness, the

³² Rowe v. Dror, 112 F.3d 473, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997). “Additionally, dependence on a particular disputed preamble phrase for antecedent basis may limit claim scope because it indicates a reliance on both the preamble and claim body to define the claimed invention. * * * Likewise, when the preamble is essential to understand limitations or terms in the claim body, the preamble limits claim scope. * * * Further, when reciting additional structure or steps underscored as important by the specification, the preamble may operate as a claim limitation. * * * Moreover, clear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art transforms the preamble into a claim limitation because such reliance indicates use of the preamble to define, in part, the claimed invention.” Catalina Mktg. Int’l Inc. v. Coolsavings.com Inc., 289 F.3d 801, 62 USPQ2d 1781, 1785 (Fed. Cir. 2002).

claim is invalid.³³ As the parties in this case are only too aware, indefiniteness under §112 ¶2 is a question of law that is drawn from the court's performance of its duty as the construer of patent claims.³⁴ In a communication dated January 28, 2003, the SM advised the parties that such issues seemed ripe for consideration during this Markman proceeding.

The Federal Circuit has not insisted that claims be plain on their face in order to avoid condemnation for indefiniteness; rather, it has asked that the claims be amenable to construction, however difficult that task may be. If a claim is insolubly ambiguous, and no narrowing construction can properly be adopted, the claim may be held indefinite. If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, the claim may be sufficiently clear to avoid invalidity on indefiniteness grounds. By finding claims indefinite only if reasonable efforts at claim construction prove futile, the court accords respect to the statutory presumption of patent validity, and protects the inventive contribution of patentees, even when the drafting of their patents has been less than ideal.³⁵ As the court recently explained,

It may of course occur that persons experienced in a technologic field will have divergent opinions as to the meaning of a term, particularly as narrow distinctions are drawn by the parties or warranted by the technology. Patent disputes often raise close questions requiring refinement of technical definitions in light of particular facts. The judge will then be obliged to decide between contending positions; a role familiar to judges. But the fact that the parties disagree about claim scope does not of itself render the claim invalid.³⁶

In the context of means-plus-function claiming, however, a definite legal principle has emerged: failure to describe adequately the necessary supporting structure, material, or acts in

³³ See, e.g., Allen Eng'g Corp. v. Bartell Indus. Inc., 299 F.3d 1336, 63 USPQ2d 1769, 1775-76 (Fed. Cir. 2002).

³⁴ Personalized Media Comm. LLC v. United States ITC, 161 F.3d 696, 48 USPQ2d 1880, 1888 (Fed. Cir. 1998). Nonetheless, the definiteness inquiry focuses on whether those skilled in the art would understand the scope of the claim when the claim is read in light of the rest of the specification. Union Pac. Res. Co. v. Chesapeake Energy Corp., 236 F.3d 1625, 57 USPQ2d 1293, 1297 (Fed. Cir. 2001).

³⁵ See Exxon Res. & Eng'g Co. v. United States, 265 F.3d 1371, 60 USPQ2d 1272, 1276 (Fed. Cir. 2001).

³⁶ Verve LLC v. Crane Cams Inc., 311 F.3d 1116, 65 USPQ2d 1051, 1054 (Fed. Cir. 2002).

the written description means that the drafter has failed to comply with the second paragraph of §112.³⁷ For a court to hold that the specification lacks a disclosure of structure in the patent specification that performs the claimed function necessarily means that the court finds the claim in question indefinite, and thus invalid. Because the claims of a patent are afforded a statutory presumption of validity, a challenge to a claim containing a means-plus-function limitation as lacking structural support requires a finding, by clear and convincing evidence, that the specification lacks disclosure of structure sufficient to be understood by one skilled in the art as being adequate to perform the recited function.³⁸

The SM is aware of this Court's order of January 13, 2003 in Pharmastem Therapeutics, Inc. v. Viacell Inc., et al. (C.A. No. 02-148 GMS) in which it declined the invitation to consider an indefiniteness defense as a part of the Markman proceeding. The SM believes that refusal to have been perfectly appropriate under the circumstances, in view of the teaching of Exxon v. United States³⁹ and other Federal Circuit cases. Unless it is established, in clear and convincing fashion, that a claim term is insolubly ambiguous, there is no warrant for declaring the claim invalid under §112 ¶2 at the Markman stage of the proceedings.⁴⁰

THE PATENTS IN SUIT

The asserted claims are claim 4 of U.S. Patent No. 4,494,490 ('490 patent), issued September 15, 1987 on an application filed November 3, 1981; claim 17 of U.S. Patent No. 4,965,825 ('825 patent), issued October 23, 1990 on an application filed September 11, 1987 that

³⁷ See, e.g., In re Dossel, 115 F.3d 942, 42 USPQ2d 1881, 1884-85 (Fed. Cir. 1997). If no embodiment discloses corresponding structure, the claim is invalid for failure to satisfy the definiteness requirement of §112 ¶2. Cardiac Pacemakers Inc. v. St. Jude Med. Inc., 296 F.3d 1106, 63 USPQ2d 1725, 1730-31 (Fed. Cir. 2002).

³⁸ Budde v. Harley-Davidson Inc., 250 F.3d 1369, 58 USPQ2d 1801, 1806 (Fed. Cir. 2001).

³⁹ See note 35.

⁴⁰ The SM does note, however, that the terms in issue in Pharmastem do not appear to have been in MPF format.

was a continuation-in-part tracing ultimately to the original '490 application; claims 1, 2, 5, and 7 of U.S. Patent No. 5,109,414 ('414 patent), issued April 28, 1992 on an application filed September 25, 1990 as a continuation of the '825 application; claims 10, 66, and 70 of U.S. Patent No. 5,233,654 ('654 patent), issued August 3, 1993 on an application filed March 10, 1992 as a continuation of the '414 application; claims 7, 12, 13, 17, and 18 of U.S. Patent No. 5,335,277 ('277 patent), issued August 2, 1994 on an application filed May 3, 1993 as a continuation of the '654 application; and claims 14, 21, 30 and 41 of U.S. Patent No. 5,887,243 ('243 patent), issued March 23, 1999 on an application filed June 7, 1995 as a continuation of an application (No. 08/113,329, filed August 30, 1993; never issued as a patent) tracing back to the '277 patent. As can be seen, all of the patents subsequent to '490 thus share an identical written description and have an effective filing date of November 3, 1981 for claimed subject matter supported by the original '490 application and an effective filing date of September 11, 1987 for claimed subject matter that was added by the '825 application.⁴¹

PROSECUTION OF RELATED PATENT APPLICATIONS

Separate patents issuing on a chain of related applications, like those described above, are not unusual. There is, however, an aspect of this in the present case that is rather unusual. According to defendants, the application that matured into the '243 patent was but one of 328 separate patent applications that were filed between March 2, 1995 and June 7, 1995 as continuations of the same parent application 08/113,329. Thus, as of June 7, 1995 there were 329 pending patent applications (the parent and the 328 new ones) pending, all with identical specifications. The only one of these 329 applications that has issued to date, apparently, is the

⁴¹ See Transco Prods., Inc. v. Performance Contr., Inc., 38 F.3d 551, 32 USPQ2d 1077, 1080 (Fed. Cir. 1994).

'243 patent.⁴² Serious questions are sure to be encountered in this case as to whether such conduct is more than just unusual – whether it does, indeed, affect the validity or enforceability of any of the asserted patents.

For present purposes, however, it is important to recognize that the Federal Circuit has observed that, in general at least,

[T]here is nothing improper, illegal or inequitable in filing a patent application for the purpose of obtaining a right to exclude a known competitor's product from the market; nor is it in any manner improper to amend or insert claims intended to cover a competitor's product the applicant's attorney has learned about during the prosecution of a patent application. Any such amendment or insertion must comply with all statutes and regulations, of course, but, if it does, its genesis in the marketplace is simply irrelevant * * *.⁴³

Indeed, the Federal Circuit has described a patent owner's behavior in "manipulating its secret pending patent application to cover the functionally competitive structure it did not think of but deems to embody its proprietary 'inventive concept'" as "classic commercial gamesmanship under the patent system."⁴⁴

Nonetheless, abuses of continuation practice – real or perceived – have recently been receiving increased scrutiny by the Federal Circuit. One result has been an affirmation that the doctrine of prosecution laches may intervene to rectify such abuses.⁴⁵ On a related front, that court has reemphasized that failure to find adequate support for a claim in the specification provides a free-standing defense of lack of an adequate written description under § 112 ¶1.⁴⁶ Although one suspects that defendants intend to press these potential defenses – to say nothing of an inequitable conduct defense⁴⁷ based on the same circumstances – by way of summary

⁴² Broderick Declaration ¶¶13-18.

⁴³ Kingsdown Med. Cons. Ltd. v. Hollister Inc., 863 F.2d 867, 9 USPQ2d 1384, 1390 (Fed. Cir. 1988).

⁴⁴ State Industries, Inc. v. A.O. Smith Corp., 751 F.2d 1226, 224 USPQ 418, 424 (Fed. Cir. 1985).

⁴⁵ See In re Bogese, 303 F.3d 1362, 64 USPQ2d 1448 (Fed. Cir. 2002); Symbol Tech. Inc. v. Lemelson Medical, 277 F.3d 1361, 61 USPQ2d 1515 (Fed. Cir. 2002).

⁴⁶ See Enzo Biochem Inc. v. Gen-Probe Inc., 296 F.3d 1315, 63 USPQ2d 1609 (Fed. Cir. 2002).

⁴⁷ See DIB '243 p. 4: "The inequitable-conduct implications of these prosecution tactics are a topic for another day."

judgment motions or at trial, defendants attempt to use this conduct in the context of this Markman proceeding to bolster their defenses of claim indefiniteness under §112¶2. To that end, they submitted, in connection with their initial brief on the '243 patent, a massive declaration of attorney Christopher P. Broderick (Broderick I). In their responsive brief on the '243 patent, they included an appendix supported by another hefty Broderick declaration (Broderick II). They characterize these declarations as establishing that the '243 patent "contains claim verbiage (including verbiage in the claims here asserted) that is identical and virtually identical to verbiage that, in parallel cases, was rejected for indefiniteness and/or for lack of specification support – by dozens of examiners." (DIB '243 p. 4; emphasis in original) And again, that "after examination of dozens of virtually-identical claims containing [certain limitations] in conjunction with the '243 and parent specifications, by dozens of examiners in the PTO, the overwhelming consensus is that the [limitations] are not adequately explained in the specification and not understood by persons possessing ordinary skill in the art." (DRB '243 p. 27) Suffice it to say, for present purposes, that the parallel prosecution of related applications is relevant only in one respect, and that is claim construction. Questions of enablement, support, and adequacy of written description, under §112¶1, and, to the extent the claims are not "insolubly ambiguous," definiteness under §112¶2, are obviously not ripe for resolution in this Markman proceeding. Accordingly, evidence relating to prosecution of related applications has been considered, if at all, only insofar as it may have some probative value on the fundamental claim construction issues presented here.

DISCUSSION

As indicated at the outset, the patents in suit claim various aspects of an extremely long and comprehensive invention disclosure. Plaintiffs' précis is probably as good as any:

The patent claims discussed in this brief are directed to various facets of the disclosed system. The asserted claim of the '490 patent, for example, is directed to a receiver station and the technique used by that station to process received signals to provide overlays. The asserted claims of the '825 patent are addressed to the ability of the disclosed system to control apparatus at the receiver site. The asserted '414 patent claims are directed to the intermediate transmission station of the disclosed system, that is, the facility that receives programming from various sources and retransmits it, along with digital information, to receiver stations at subscriber homes and businesses. The asserted claims of the '654 patent are directed to the ability to remotely collect data from receiver sites for billing or other purposes. The asserted '277 patent claims are directed to signal processing, data processing, and decryption techniques, among other things. And the asserted claims of the '243 patent are directed to the disclosed system's ability to provide an interactive or multimedia television experience. (PIB p.3)

The claims of these patents are not very informative, at least to the casual reader. That is to say, they give little or no hint as to what kind of commercial system might embody or infringe the various claim limitations. This is not, however, unusual in patents that claim portions of very large systems. As a consequence, the SM apologizes for not having attempted to characterize, in language understandable to those not skilled in this technology, the essential gist of the claimed inventions. As justification, the SM can only take solace in several Federal Circuit rubrics that may be thought to excuse any dereliction of duty in this respect: (1) claim construction is carried out without regard for the accused infringement,⁴⁸ (2) it is not necessary that a claim recite each and every element needed for the practical utilization of the claimed subject matter,⁴⁹ and (3) perhaps most important, there is no legally recognizable or protected gist or heart of the invention.⁵⁰

⁴⁸ E.g., Young Dental Mfg. Co. v. O3 Special Prods., Inc., 112 F.3d 1137, 42 USPQ2d 1589, 1592 (Fed. Cir. 1997).

⁴⁹ Stiftung v. Renishaw PLC, 945 F.2d 1173, 20 USPQ2d 1094, 1100-01 (Fed. Cir. 1991). A patent may have subcombination claims drawn to only one aspect or combination of elements of an invention that has utility separate and apart from other aspects of the invention. So long as the recited structure is capable of performing its claimed purpose, greater utility or more definite claiming is not required. Id. A claim is not defective when it states fewer than all of the steps that may be performed in practice of an invention. Smith & Nephew Inc. v. Ethicon Inc., 276 F.3d 1304, 61 USPQ2d 1065, 1069 (Fed. Cir. 2001).

⁵⁰ E.g., Everpure, Inc. v. Cuno, Inc., 875 F.2d 300, 10 USPQ2d 1855, 1857 (Fed. Cir. 1989).

It should be recognized, as well, that the asserted claims of the patents in suit are extremely broad – viewed from the standpoint of ordinary meaning – and the recommended constructions of the specific terms of those claims are likely to be correspondingly broad, absent evidence, in the intrinsic patent documents, of an unmistakable relinquishment of that breadth. That such constructions may expose the claims to attack on grounds of lack of enablement or inadequate supporting written description under §112 ¶1, or even invalidity for lack of novelty or obviousness under §§102 and 103, are concerns for another day. Although it is appropriate *if possible* to construe claims to preserve their validity,⁵¹ it is not often possible to do that within the confines of a Markman proceeding, where such defenses are not, and cannot be, sufficiently developed to provide a rationale for narrower construction.⁵²

Claim construction begins, as it must, with the words of the claims.⁵³ The claims of the patents in suit, together with the positions of the parties relative to disputed claim elements, are set out in the Joint Claim Chart that the parties have prepared for the convenience of the Court and the SM.⁵⁴ In the discussion that follows, certain claim terms or elements may be common to different claims, sometimes in different patents. It may be assumed, unless expressly stated otherwise, that the discussion applies to all occurrences of such terms or elements.⁵⁵

⁵¹ Tate Access Floors Inc. v. Interface Arch. Res. Inc., 279 F.3d 1357, 61 USPQ2d 1647, 1654, 1658 (Fed. Cir. 2002).

⁵² In this context, the appellate court often has the advantage over the trial court, in that the invalidity defenses may be well-developed by the time a case reaches that level. The trial court, on the other hand, usually cannot know, at the time of a Markman proceeding, whether a particular construction of a term would “save” the patent or not. Perhaps this reality argues for taking on the task of claim construction at a later stage in the proceedings, either concurrently with dispositive motions or as part of the preparations for instruction of the jury.

⁵³ Vehicular Tech. Corp. v. Titan Wheel Int'l, 141 F.3d 1084, 46 USPQ2d 1257, 1260 (Fed. Cir. 1998).

⁵⁴ Owing to its length, the Joint Claim Chart is not attached, but it is incorporated herein and made a part hereof.

⁵⁵ Where multiple patents have identical disclosures, it is appropriate to construe their claims in pari materia, absent some indication that the limitations should be construed differently for some claims than for others. See Ballard Med. Prods. v. Allegiance Healthcare Corp., 268 F.3d 1352, 60 USPQ2d 1493, 1500 (Fed. Cir. 2001). When multiple patents derive from the same initial application, the prosecution history regarding a claim limitation in any

A. Level of Skill in this Art

Inasmuch as the claims of the patents in suit must be considered from the viewpoint of a hypothetical person of ordinary skill in the art, both for construing⁵⁶ the claims and assessing their adequacy under §112^{¶2},⁵⁷ an important first step is to attempt to flesh out this phantom by assigning some values to characteristics such as education and experience. The patented systems comprehend a broad range of electronics expertise, in that they involve, in the words of the patents themselves, such fields as "computer processing, computer communications, television, radio, and other electronic communications; the fields of automating the handling, recording, and retransmitting of television, radio, computer, and other electronically transmitted programming; and the fields of regulating, metering, and monitoring the availability, use, and usage of such programming." (E.g., '825 C1L16-22)⁵⁸ The engineering of such systems is usually approached by assembling a team of workers, and the individual skills of the members of such a team are usually not extraordinary. The patent law requires, however, that we make some attempt to distill a typical profile from this amalgam of persons and skills. After hearing the testimony of the parties' experts (Tr. 41, 155), the SM feels comfortable in recommending that the claims be assessed and construed from the standpoint of a person having at least the equivalent of a first college degree in digital electronics or electrical engineering, and several years of post-degree experience in the engineering of communications or control systems.

patent that has issued applies with equal force to subsequently issued patents that contain the same claim limitation. Biovail Corp. Int'l v. Andrx Pharm. Inc., 239 F.3d 1297, 57 USPQ2d 1813, 1816 (Fed. Cir. 2001).

⁵⁶ E.g., Bell Atl. Network Serv. Inc. v. Covad Comm. Group Inc., 262 F.3d 1258, 59 USPQ2d 1865, 1870-71 (Fed. Cir. 2001).

⁵⁷ E.g., Budde v. Harley-Davidson Inc., 250 F.3d 1369, 58 USPQ2d 1801, 1806, 1809 (Fed. Cir. 2001).

⁵⁸ This citation format, used throughout this report, indicates that the material will be found at lines 16-22 of column 1 of the '825 patent.

B. The Timing of the Inquiry

The Federal Circuit has itself noted that “[o]ur decisions have not always been consistent as to whether the pertinent date [for construing the claims] is the filing date of the application or the issue date of the patent.”⁵⁹ That, with all respect, is something of an understatement. In Markman itself, the court said “the focus is on the objective test of what one of ordinary skill in the art at the time of the invention would have understood the term to mean.”⁶⁰ A few years later, the court remarked that an inventor cannot “by later testimony change the invention and the claims from their meaning at the time the patent was drafted and granted.”⁶¹ Shortly thereafter, the court observed that “the literal meaning of a claim is fixed upon its issuance.”⁶² But a year after that, it held that “this court must determine what the term meant at the time the patentee filed the [patent] application,” and thus refused to consider information that had been published several months after the filing date of the application.⁶³ The next year, the court held that when a claim term understood to have a narrow meaning when the application is filed later acquires a broader definition, the literal scope of the term is limited to what it was understood to mean at the time of filing.⁶⁴ Finally, in a case⁶⁵ decided only months ago, we find the court telling us, in no uncertain terms, that

When a patent is granted, prosecution is concluded, the intrinsic record is fixed, and the public is placed on notice of its allowed claims. Dictionaries,

⁵⁹ Inverness Med. Switz. GmbH v. Princeton Biomeditech Corp., 309 F.3d 1365, 64 USPQ2d 1926, 1930 n.1 (Fed. Cir. 2002).

⁶⁰ Markman v. Westview Instr., Inc., 52 F.3d 967, 34 USPQ2d 1321, 1335 (Fed. Cir. 1995), aff’d 517 U.S. 370, 38 USPQ2d 1461 (1996).

⁶¹ Voice Tech. Group Inc. v. VMC Sys. Inc., 164 F.3d 605, 49 USPQ2d 1333, 1341 (Fed. Cir. 1999).

⁶² Al-Site Corp. v. VSI Int’l Inc., 174 F.3d 1308, 50 USPQ2d 1161, 1168 (Fed. Cir. 1999).

⁶³ Schering Corp. v. Amgen Inc., 222 F.3d 1347, 55 USPQ2d 1650, 1654 (Fed. Cir. 2000). The court did, however, seem to leave room for the possibility that the date of invention, if it as a matter of record preceded the filing date, might be appropriate.

⁶⁴ Kopykake Inter. Inc. v. Lucks Co., 264 F.3d 1377, 60 USPQ2d 1124, 1127 (Fed. Cir. 2001). It should be noted that the court would probably have used the date of invention rather than the filing date if a prior date of invention had been established on the record. See also Plant Genetic Sys. N.V. v. DeKalb Genetics Corp., 315 F.3d 1335, 65 USPQ2d 1452, 1460 (Fed. Cir. 2003).

⁶⁵ Texas Digital Sys. Inc. v. Telegenix Inc., 308 F.3d 1193, 64 USPQ2d 1812, 1818 (Fed. Cir. 2002).

encyclopedias and treatises, publicly available at the time the patent is issued, are objective resources that serve as reliable sources of information on the established meanings that would have been attributed to the terms of the claims by those of skill in the art.

In many cases, the chronological reference point for the claim construction inquiry will not be determinative, in that nothing relevant may have surfaced between the time of filing (or invention) and the date of issue. In the present case, however, that happy situation does not necessarily prevail. As discussed previously, the application that led to the '490 patent was filed in 1981, and that patent itself issued in 1987. The expanded application that led to the other patents in suit was filed in 1987, just before the '490 patent issued, and the various patents issued anywhere from 1990 to 1999. Those time periods between filing and issue leave plenty of time for relevant material to intervene, particularly in a fast-moving technology like the subject of the patents.

Consequently, the SM feels obliged to select the an appropriate chronological reference point and to recommend that selection to the Court in this case. The actual date of invention seems ill-advised as a choice, because in many cases it is not otherwise in issue, and it would not serve the interests of judicial economy to have to decide, in a large proportion of Markman proceedings, the difficult question of precisely when the invention was made. Moreover, in the absence of evidence of an actual date of invention, the filing of an application serves as a constructive reduction to practice, thus fixing the date of invention.⁶⁶ The filing date is a seemingly reasonable choice as the appropriate reference point, if for no other reason than it is not a variable date, like the issue date, that depends upon the length of the prosecution. However, in the opinion of the SM, using the filing date as the point in time as of which the meaning of the claims must be ascertained would, if rigidly observed, require the court to ignore the prosecution

⁶⁶ E.g., Hyatt v. Boone, 146 F.3d 1128, 47 USPQ2d 1128, 1130 (Fed. Cir. 1998).

itself, which of course occurs *after* the application is filed. For this reason, and for the additional reason that the most recent pronouncement of the Federal Circuit instructs that the dictionaries and treatises that are to be consulted in determining ordinary meaning are those existing as of the date the patent issues, it is recommended that the Court construe the claims as they would have been understood by a person of ordinary skill in the art when the patent issued.

C. System Claims – Means-Plus-Function Treatment under 35 U.S.C. §112¶6

Several of the asserted system or apparatus claims of the patents contain limitations that are presumptively in MPF format: claims 1, 2, 5, and 7 of '414, and claims 10, 66, and 70 of '654. The parties are definitely at odds with respect to the applicability of §112¶6 to many of these limitations. With respect to the claims of the '414 and '654 patents, defendants assert that all but one ("processor means") of the limitations that employ the signal "means for" are to be construed as MPF limitations. Plaintiffs, on the other hand, argue that none of those limitations in the '414 patent, despite use of the presumption-creating signal, is truly in MPF format.⁶⁷ As for the '654 patent, plaintiffs take essentially the same position, except that they do concede that two "means for" limitations ("memory means" and "recorder means") should be accorded §112¶6 treatment. In many instances both sides hedge their bets against the possibility that their asserted positions will not win out and propose alternative constructions.

In some instances, the limitations in question, in the view of the SM, clearly invoke §112¶6. These are limitations in which neither the adjective modifier preceding the "means for" signal (e.g., "input means for"; '654 claim 10) nor the recited function ("inputting member information") gives a clue as to any supporting structure. Consequently, the presumption that

⁶⁷ The SM finds plaintiffs' intractability in this regard unhelpful, to say the least. In most instances they are unable to point to any grounds in the intrinsic patent record for overcoming the presumption created by the incantation "means for."

§112 ¶6 applies cannot be overcome as to those limitations. In other instances, the matter is not so clear, inasmuch as either the modifier (e.g., “processor means”; ‘414 claim 1) or the functional recitation (“for identifying each detected control signal as having been detected by a particular detector means”) provides at least some basis for structural support. In the discussion that follows, the SM has grouped the functional limitations into those that clearly invoke §112 ¶6 and those that at least presumptively so do. Any terms in the functional recitations that are in dispute or require construction are also discussed in this section.

Limitations that Clearly Invoke §112 ¶6

Receiver/Distribution Means ('414 all claims). The limitation is “a plurality of receiver/distribution means for receiving programming from a program source and for inputting said programming to a switch means and a plurality of detector means.” The term “receiver/distribution” as a modifier for means conveys no information about the structure of the means – only its function: receiving and distributing. The specified function is likewise not informative in this regard. Saying that a device receives programming from a source and inputs it to a switch and a plurality of detectors says nothing about the structure of the device.

Accordingly, “receiver/distribution means” should be construed to mean the various receiver types 53-62 shown in Fig. 6A of the ‘414 patent, with associated antennae and conductors,⁶⁸ and equivalents that were known at the time the patent issued.⁶⁹ The recited function needs no construction except for the terms “switch means” and “detector means” which are treated below.

⁶⁸ Plaintiffs take the position (PRB pp. 26-28) that the supporting structure does not include an antenna and conductors. But without those elements, the “receiver/distribution means” could hardly receive programming from a program source and input the programming to a switch and a plurality of detectors, as required by the functional portion of the limitation.

⁶⁹ See Al-Site Corp. v. VSI Int'l Inc., 174 F.3d 1308, 50 USPQ2d 1161, 1168 (Fed. Cir. 1999).

Storage Means ('414 claim 1), Storage/Transfer Means ('414 claims 5 and 7) and Memory Means ('654 all claims). In each instance in the '414 patent the recited function is "for receiving and storing said detected control signals." Claims 5 and 7 of that patent provide for an additional function of "transferring at least a portion of said control signals for further processing." The functional recitation of the '654 claims is "for storing said input information." Claim 10 also calls for a "second memory means for storing said data." Nothing in the words "storage," "storage/transfer," or "memory" implies any particular structure, nor do the functional recitations. In the '414 patent the elements that receive and store control signals and transfer them are a RAM or PRAM ('414 C20L23-27). Accordingly, **these limitations in the '414 patent should be construed to mean a RAM or a PRAM, and equivalents thereof that were known when the patent issued.** The functional recitations need no construction.

The parties are in essential agreement as to the elements disclosed in the '654 patent that perform the function of storing the input information and the data that is output from the processor. **Accordingly, these limitations should be construed to mean a RAM, EPROM, buffer, comparator, floppy disk, register, or computer memory, and any equivalents that were known when the patent issued.** The functional recitations require no construction.

Switch Means ('414 claims 1 and 2). Certainly the word "switch" does not imply any particular structure. From the recited functions⁷⁰ we know that the switch must be configured to receive information from any of a plurality of outputs and direct a portion of that information to an associated output device, but this really says nothing about the structure of the switch, or not

⁷⁰ The claimed functions are "receiving output from a plurality of receiver/distribution means" and "directing a selected portion * * * to an associated output device."

enough, at least, to overcome the presumption that §112 ¶6 should apply.⁷¹ Accordingly, this limitation should be construed to mean the matrix switch 75 disclosed in the specification,⁷² and equivalents known at the time the patent issued. The recited functions need no construction except for the term “receiver/distribution means” which has been addressed above.

Transmission Means ('654 all claims). The parties are agreed⁷³ on the construction of this limitation, and the SM believes that their agreement reflects a proper legal construction. Accordingly, this limitation should be construed, pursuant to §112 ¶6, to mean a connection to a telephone network or a data transfer network, and equivalents known as of the issue date of the patent. The functional recitation (“transmitting said data to said data collection station”) requires no construction.

Input Means ('654 all claims). The parties are agreed that this is a MPF limitation and they are correct: the modifier “input” describes only a functional attribute and the accompanying functional recitation – “for inputting member information” – suggests no specific structure. Plaintiffs suggest that the corresponding structure is “local input 225.” However, if the specification were truly this uninformative about the structure of the “input means,” the claims might well be invalid under §112 ¶2 (see the foregoing discussion of claim definiteness). Fortunately, the specification is not fatally terse in this respect. In discussing the local input 225, it says:

In the preferred embodiment, local input, 225, is actuated by keys that are depressed manually by the subscriber in the fashion of the keys of a so-called touch-tone telephone or the keys of a typewriter (or microcomputer) keyboard. As FIG. 4 shows, microcomputer, 205, also has capacity for inputting control

⁷¹ We also know, from the last limitation of claim 1 (“a second processor means for controlling the output directing function of said switch means”) that the directing function of the switch means must be externally controllable, but again this says little or nothing about the actual physical structure of the switch means.

⁷² The parties are agreed that the supporting structure is the matrix switch 75 in Fig. 6A of the '414 patent.

⁷³ Joint Chart p. 40.

information to microcomputer, 205, via decoder, 203, and in the preferred embodiment, microcomputer, 205, may also automatically substitute for local control, 225, in predetermined fashions in inputting control information to said controller, 20, on the basis of preprogrammed instructions and information previously inputted to said microcomputer, 205. ('654 C160L32-44)

The specification also provides for input of information to the microcomputer 205 through a modem ('654 C248L60-C249L28). Accordingly, "input means" should be construed to mean telephone keypads, typewriter or microcomputer keyboards, and microcomputers that are preprogrammed with information or receive it from a modem, as well as equivalents that were known when the patent issued. The functional recitation needs no construction inasmuch as its ordinary meaning is clear: member information is information from or about a member.

Recorder Means ('654 claims 66 and 70). The word "recorder" as a modifier says nothing about structure. The recited function of this limitation is "for storing said output records on a memory medium." This is obviously the function of any "recorder means," and likewise implies no particular structure. The element in question,

[d]igital recorder, 16, is a memory storage element of standard design that receives information from buffer/comparator, 14, and records said information in a predetermined fashion. In a predetermined fashion, recorder, 16, can determine how full it is and transmit this information to controller, 20. Recorder, 16, may inform controller, 20, automatically when it reaches a certain level of fullness. ('654 C18L53-60)

Accordingly, the §112 ¶6 presumption is not overcome, and this limitation should be construed to mean a memory storage device of standard design capable of recording digital information, and of determining how full the store is and of informing a controller when it reaches a certain level of fullness, together with equivalents known as of the issue date of the '654 patent.

Limitations that Presumptively Invoke §112 ¶6

Detector Means and Control Signal Detector Means ('414 all claims; '654 all claims). In Personalized Media Comm. LLC v. United States ITC, 161 F.3d 696, 48 USPQ2d 1880 (Fed. Cir. 1998), the Federal Circuit had occasion to construe the claims of the same '277 patent that is asserted in this case. The limitation in question was a "digital detector," and the court concluded that the ITC had erred in treating it as a MPF limitation. The court reasoned that the clause did not use the signal "means," thereby creating a presumption that it was not to be accorded §112 ¶6 treatment. It then concluded that

[e]ven though the term "detector" does not specifically evoke a particular structure, it does convey to one knowledgeable in the art a variety of structures known as "detectors." We therefore conclude that the term "detector" is a sufficiently definite structural term to preclude the application of Section 112, Para. 6.

Much of the ALJ's analysis (and the Commission's arguments to this court) centered around the ambiguity raised by the phrase "digital detector." However, an adjectival qualification ("digital") placed upon otherwise sufficiently definite structure ("detector") does not make the sufficiency of that structure any less sufficient for purposes of Section 112, Para. 6. Instead, it further narrows the scope of those structures covered by the claim and makes the term more definite. The use of the word "digital" in conjunction with the word "detector" merely places an additional functional constraint (extraction of digital information) on a structure (detector) otherwise adequately defined. 48 USPQ2d at 1888.

Although this holding might not have preclusive effect, at least with respect to all parties, under ordinary principles of res judicata,⁷⁴ there is no denying its powerful stare decisis impact.

⁷⁴ In affirming the Federal Circuit's Markman holding that claim construction is a question of law exclusively within the province of the court, the Supreme Court made it clear that claim construction holdings as to a particular patent will not normally result in issue preclusion against new accused infringers, even within the same jurisdiction. However, it strongly signaled an expectation that stare decisis would play a significant role in promoting uniformity in claim construction as to a given patent. Markman v. Westview Instr., Inc., 517 U.S. 370, 38 USPQ2d 1461, 1471

Accordingly, although the SM considers the matter to be a close question indeed,⁷⁵ this report later recommends that the limitation “digital detector” in the asserted claims of the ‘277 patent be so construed. That does not, however, end the matter for the claims of the ‘414 and ‘654 patents, for they do employ the signal “means,” thereby presumptively invoking §112¶6. Indeed, defendants urge that the limitations be construed under §112¶6. (Joint Chart, pp. 7, 39)

Nonetheless, it is not clear how this circumstance can be distinguished from the Federal Circuit holding that the term “detector” connotes sufficient structure to escape MPF treatment. If the term “detector” is itself sufficiently structural, then it would seem to be sufficiently so to overcome the presumption. The additional modifier “control signal” in certain limitations, to paraphrase the Federal Circuit’s analysis, merely places an additional functional constraint (detection of control signals) on a structure (detector) otherwise adequately defined.

Accordingly, this limitation should not be construed under §112¶6, but should be construed to mean a detector, as that term is generally understood by persons of ordinary skill in this art.

The functional recitation of “detecting” was not directly addressed by the Federal Circuit in Personalized Media. It did, however, cite with approval a dictionary definition of “detector” that had been relied upon below: “(1) : a device for determining the presence of a signal (2) : a rectifier of high-frequency current (as a cat whisker and crystal or a vacuum tube) (3) : a device for extracting the intelligence from a signal (4) DEMODULATOR 1.” 48 USPQ2d at 1887 n.

(1996). The Federal Circuit has since made it clear that its decisions on claim construction have a national stare decisis effect. Key Pharm. Inc. v. Hercon Labs. Corp., 161 F.3d 709, 48 USPQ2d 1911, 1916 (Fed. Cir. 1998).
⁷⁵ The SM has doubts about the correctness of the Federal Circuit’s conclusion that the term “digital detector” connotes sufficient structure to remove it from the ambit of §112¶6. There are many structures that could qualify as a digital detector, and many more to be invented. The Federal Circuit itself recognized that failure to employ the signal “means” is not conclusive. “These presumptions can be rebutted if the evidence intrinsic to the patent and any relevant extrinsic evidence so warrant.” 48 USPQ2d at 1888. See Mas-Hamilton Group Inc. v. LaGard Inc., 156 F.3d 1206, 48 USPQ2d 1010, 1017 (Fed. Cir. 1998) (holding that the claim language “lever moving element for moving the lever” invokes §112¶6).

12. These definitions describe the functions of an electronic device known as a detector. Plainly, from the context of the claim as a whole, the most apt functional definition is extracting the intelligence from a signal. **Accordingly, it is recommended that “detecting” be construed to mean “extracting intelligence from a signal.”**

Processor Means ('414 all claims; '654 all claims). The parties are in agreement that the term “processor means” does not invoke §112 ¶6.⁷⁶ The SM agrees with this assessment.

Although the signal “means” raises the presumption of MPF treatment, the term “processor” is one that is well understood in the electronics and communications fields to have certain structural attributes that support its functional capability of processing information. This is sufficient to overcome the presumption and remove the limitation from the ambit of §112 ¶6.

Plaintiffs assert that the meaning of “processor” is “a circuit or collection of circuits that executes instructions.” Defendants contend that it means “any circuit or device that performs logical step(s) on input data.” (Joint Chart p. 47) The parties, in the context of various occurrences of the word “processor” in the claims of the several patents in suit, cite to many possible definitions, ranging over a wide spectrum. Too broad a definition could comprehend simple hard-wired logic elements that are far removed from the notion of a “processor.” Yet too narrow a definition would not comport with the examples in the specification or the dictionary definitions, which are quite broad.⁷⁷ The SM feels that the Court should favor the center of this spectrum, according the word “processor” the breadth that it is due without reading it so broadly as to include virtually every active electronic circuit element. **Accordingly, this limitation should be construed to mean a digital electronic device that processes information by**

⁷⁶ Joint Chart p. 9.

⁷⁷ See, e.g., the definitions set forth by defendants in addressing the '277 patent (DIB '277 pp. 25-26).

operating on data according to instructions. It is recommended that this definition be used for all occurrences of the word “processor” in the asserted claims of all the patents in suit.

The associated functional recitations need no construction except to the extent that they employ terms that are treated elsewhere in this report.

Broadcast Transmission Means ('414 claims 5 and 7). This limitation does not include a separate, freestanding functional recitation; in other words, it lacks the telltale “means for” signal. From this plaintiffs argue that it is not a MPF limitation. Nonetheless, the modifying words, “broadcast transmission” are purely functional, specifying the function of the claimed means without recitation of supporting structure. This limitation invokes §112¶6.⁷⁸ In the context of this technology, the function implied by the words “broadcast transmission” is the ordinary meaning of those words: transmitting information from one location to multiple locations. Thus, it should be a straightforward exercise to identify the structure that supports this function.

Unfortunately, this is not the case, because the parties appear to differ over the meaning of the term ‘broadcast.’ Plaintiffs argue that ‘the applicants acted as their own lexicographer in carefully distinguishing ‘broadcast’ from ‘cablecast’ in the ‘414 patent specification. * * * ‘Broadcast’ was specifically limited to over-the-air transmissions, while ‘cablecast’ referred to hard-wire transmissions.” (PRB p. 34) On the surface of things, this is true. The specification tells us that the “programming may be delivered by any means including over-the-air, hard-wire, and manual means. The stations may transmit programming over-the-air (hereinafter, ‘broadcast’) or over hard-wire (hereinafter, ‘cablecast’).” ('414 C8L64-67) Defendants, however, are quick to point out that, thereafter, the specification vacillates on this usage. For example,

⁷⁸ See Signtech USA Ltd v. Vutek Inc., 174 F.3d 1352, 50 USPQ2d 1372, 1374-75 (Fed. Cir. 1999) (“Ink delivery means” is equivalent to “means for ink delivery” in the context of determining whether it should qualify for MPF treatment under §112¶6); Kemco Sales Inc. v. Control Papers Co., 208 F.3d 1352, 54 USPQ2d 1308, 1313 (Fed. Cir. 2000) (“plastic envelope closing means” held to be a MPF limitation).

some 130 columns later, it tells us that “[s]ignal processor, 200, is preprogrammed with information that identifies each cable and over-the-air (hereinafter, wireless) transmission or frequency in the locality of the subscriber station of FIG. 3 as well as the standard broadcast and cablecast practices that apply on said transmissions and frequencies.” ('414 C139L55-60) Thus, it introduces a new term, “wireless,” and frequently employs that term in juxtaposition to cable transmissions. (See DRB '414 p. 18)

The SM personally examined each occurrence of the words “broadcast,” “cablecast,” and “wireless” in the '414 patent and found that there was no consistency in usage. However, when the specification turned to a description of the intermediate stations, it left little doubt as to what was meant:

The signal processing apparatus outlined in FIGS. 2, 2A, 2B, 2C, and 2D, and their variants as appropriate, can be used to automate the operations of intermediate transmission stations that receive and retransmit programming. The stations so automated may transmit any form of electronically transmitted programming, including television, radio, print, data, and combined medium programming and may range in scale of operation from wireless broadcast stations that transmit a single programming transmission to cable systems that cablecast many channels simultaneously. ('414 C181L65-C182L6; emphasis added)

So too when the discussion turned to ultimate receiver stations:

The programming so displayed (or outputted) may be any form of electronically transmitted programming, including television, radio, print, data, and combined medium programming and may be received via any electronic transmission means including wireless and cable means. ('414 C218L17-22; emphasis added)

These statements leave no doubt that “broadcast transmission” as used in the claims is broader than simply wireless transmissions, and would include cable transmissions as well.

The question then becomes what is the structural means that underlies the function of transmitting information from one location to multiple locations. Certainly one such structure is

the cable field distribution system disclosed in connection with the automated intermediate transmission station. Plaintiffs point to no corresponding structure supporting a wireless broadcast transmission, but it may well be that such systems are notorious in the art and need no structural explication.

Accordingly, this limitation should be construed to mean a cable field distribution system or equivalent wireless system, known at the time the patent issued, for transmitting information from one location to multiple locations.

Buffer/Memory Storage Means ('414 claim 2). It might, at first glance, be supposed that the addition of the word "buffer" should differentiate this limitation from the "storage means" of claim 1 of the '414 patent. It is possible that the word might imply some structure to those of skill in the art. The problem, however, is that the specification is silent on the meaning of the term "buffer/memory storage." Defendants argue that the term as a consequence is ambiguous and claim 2 is invalid for indefiniteness under §112 ¶2. However, this misapprehends the whole point of claim construction, which is to resolve ambiguities in claim language. Indeed, construction is not required unless, when given its ordinary meaning, a term is ambiguous. Only if a claim is insolubly ambiguous, and no narrowing construction can properly be adopted, the claim may be held indefinite. If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, the claim may be sufficiently clear to avoid invalidity on indefiniteness grounds.⁷⁹

In the context of the '414 patent, it seems clear that the term "buffer/memory storage means" was not intended to have a meaning different than the simple "storage means" of claim 1.

⁷⁹ See discussion accompanying notes 33-38.

Accordingly, this limitation should be construed to mean the same thing as “storage means” in claim 1.

Matrix Switch Means ('414 claims 5 and 7). This limitation, albeit presumptively invoking §112¶6, has a significant difference from its counterpart “switch means” in claims 1 and 2 of the '414 patent. Both clearly refer to the matrix switch 75 shown in Fig. 6A. But the claim word “matrix” implies some controllability, so that a selection may be made as to where a given input is to be directed for output. Of course, this could be accomplished by manual manipulation of mechanical switches, but the entire context of the specification (and the last limitation of each of claims 5 and 7) indicates that this control is to be achieved electronically, by a processor. An electronically controlled matrix switch appears to be a commonly understood device in the electronics field, having a reasonably generic physical structure. This is sufficient to overcome the presumption that §112¶6 applies to this limitation. Accordingly, “matrix switch” is to be given its commonly understood meaning to those of ordinary skill in this art, which, in the context of this patent, is an electronically controllable device capable of interconnecting any given input with any given output.

D. Method Claims – Step-Plus-Function Treatment under 35 U.S.C. §112¶6

Several of the method claims of the asserted patents contain limitations that arguably invoke §112¶6: claim 4 of '490; claims 14 and 17 of '825; and claims 14, 21, 30, and 41 of '243. In their written submissions, neither side has taken a position on whether §112¶6 should apply to these limitations. Nonetheless, the SM is obliged to examine them and recommend that they be construed in accordance with §112¶6 if that construction is warranted as a matter of law.

None of the method limitations in question uses the signal “step[s] for.” Rather, each employs the term “step[s] of.” Thus, “without a showing that the limitation contains nothing that

can be construed as an act," it will not be regarded as a step-plus-function limitation.⁸⁰ Moreover, in order to fall within §112¶6, the claim limitation must recite a function.⁸¹ In determining whether a recital constitutes a supporting act for achieving a function, the emphasis will be on looking to see whether the claim language specifies *how the function is achieved* rather than simply what it is.⁸²

The '490 Patent – Claim 4. Claim 4 contains two steps: "transmitting a video signal" and "transmitting an instruct-to-overlay signal." Nothing in the clause containing the first step suggests a function, nor an act for accomplishing a function. Rather, it recites merely the action of transmitting. Accordingly, this limitation does not invoke §112¶6.

The second step – transmitting an instruct-to-overlay signal – is more conditional in that it is required to achieve a specific functional result, namely, "to thereby cause selected ones of said computers to generate and transmit their overlay signals."⁸³ The bare recital of transmitting an instruct-to-overlay signal, although unquestionably the recital of an action, provides no information about how the functional goal of computer generation and transmission of overlay signals is to be achieved, and it cannot therefore be regarded as an "act" within the meaning of §112¶6. Although the signal "step for" is missing, thus raising the presumption that §112¶6 does not apply, this presumption is overcome by the fact that the step that is to produce the recited function is devoid of any supporting acts. The supporting acts are comprehended in the following portion of the specification:

Microcomputer, 205, is preprogrammed to respond in a predetermined fashion to instruction signals embedded in the "Wall Street Week" programming

⁸⁰ See note 26 and accompanying text.

⁸¹ See Wenger Mfg. Inc. v. Coating Mach. Sys. Inc., 239 F.3d 1225, 57 USPQ2d 1679, 1684-86 (Fed. Cir. 2001).

⁸² See notes 27 and 28 and accompanying text.

⁸³ The treatment of the language in a "whereby" clause in Lockheed Martin Corp. v. Space Systems/Loral Inc., 249 F.3d 1314, 58 USPQ2d 1671, 1678 (Fed. Cir. 2001), is not seen to be apposite here. The language following the word "whereby" in that case was by way of describing essentially the function of the entire claimed control system. Here, the language following the word "thereby" clearly describes the functional result of the transmitting action.

transmission. When the "Wall Street Week" transmission begins at 8:30 PM on a Friday evening, several instruction signals are identified by decoder, 203, and transferred to microcomputer, 205. These signals instruct microcomputer, 205, to generate several graphic video overlays, which microcomputer, 205, has the means to generate and transmit and TV set, 202, has the means to receive and display, and to transmit these overlays to TV set, 202, upon command. * * * [At a point in the television programming transmission], an instruction signal is generated in the television studio originating the programming and is transmitted in the programming transmission. This signal is identified by decoder, 203, and transferred via processor, 204, to microcomputer, 205. This signal instructs microcomputer, 205, to transmit the first overlay to TV set, 202, for as long as it receives the same instruction signal from processor, 204. ('490 C19L42-67)

This clause should be treated as a step-plus-function limitation under §112¶6 and construed to cover the acts described in the '490 specification that, as a result of the transmission of an instruct-to-overlay signal, cause selected ones of the computers to generate and transmit overlay signals, and known equivalent acts.

The '825 Patent – Claims 14 and 17. Again, neither party suggests step-plus-function treatment of any limitations in the '825 patent claims. The SM agrees with this implicit assessment, particularly in view of the lack of the telltale signal "step for" and the consequent presumption that §112¶6 does not apply. Claim 14 of the '825 patent recites a method having six steps, (a)-(f). With the exception of step (b), each step simply constitutes an action without a recital of functional result. Step (b) calls for "demodulating said carrier transmission to detect an information transmission thereon." Although detection of information does connote functionality, the function specified is simply that of any demodulation step, and that function can be achieved by any demodulation technique suitable to the claimed process as a whole. Dependent claim 17 adds the step of "decrypting an encrypted information transmission." Again, this bare recitation does not specify a function other than the action of decrypting, and there is no indication of how the encrypted information is to be decrypted. **Consequently, none of the steps of claims 14 and 17 of the '825 patent should be accorded §112¶6 status.**

The '243 Patent – Claims 14, 21, 30 and 41. The asserted method claims of the '243 patent recite a series of steps that, in each instance but two, simply recite an action without attendant functionality. The parties make no contentions about the applicability of §112¶6. Neither of the exceptions employs the signal “step for,” and it is therefore to be presumed that §112¶6 does not apply. Nonetheless, the SM is obliged to carry the analysis further.

The first exception is found in the third step of claim 21, which calls for “controlling said processor to output specific information in response to said step of inputting said instruct-to-react signal.” The recited action of “controlling said processor” has a specific recited function, namely, “to output specific information in response to” an earlier recited step. But there is no recital of a supporting act specifying how that function is to be achieved. The acts described in the specification that achieve this function are as follows:

Receiving said message causes controller, 20, to load and execute said check-for-entered-information-and-process instructions, and executing said instructions causes controller, 20, to determine that TV567# information exists at said last-local-input-# memory and to cause an instance of particular covert control information (which is preprogrammed in said instructions) to be placed at particular control-function-invoking information memory of the controller, 39, of decoder, 145, and also at particular control-function-invoking information memory of the controller, 39, of decoder, 203. Executing said instructions also causes controller, 20, to initiate a particular signal record of meter information at the buffer, 14, of signal processor, 200, which record contains particular program unit information and TV567# information. ('243 C249L4-19)

This clause should be construed according to §112¶6 to cover the acts described in the '243 specification for accomplishing the function of outputting specific information in response to the inputting step, and equivalents known as of the issue date of the '243 patent.

Similarly, claim 30, which is dependent on claim 21, adds the step of “controlling a video recorder/player to one of record and play.” Again, the recited function of this “controlling” step is to record or play, but no supporting act is recited that indicates how that function is achieved.

However, as in the case of the “demodulation” step of claim 14 of the ‘825 patent, the functions of recording and playing are the functions of any video recorder/player and those functions are invoked by “controlling” the device. Accordingly, this step should not receive §112 ¶6 treatment.

E. The ‘490 Patent

According to plaintiffs, the claims of this patent are “directed to an ultimate receiver station and the techniques used by that station to process received signals to provide overlays. While the television broadcast that is sent to each subscriber is the same, the embedded signals in the transmission allow the ultimate receiver station to generate different displays for different people.” (PIB p. 37) Only claim 4 is asserted.

“Computers being adapted to generate and transmit.” The parties proffer similar definitions of this term. Plaintiffs say that if it is to be construed, it means “computers that locally generate overlay video signals and transmit the overlay video signals to the television receiver.” (Joint Chart p. 1) Defendants add the words “from recorded data known only to the subscriber” after the first occurrence of “signals.” (Id.) Thus, defendants want the claim to be construed to mean that the overlay signals that are generated by the computer be generated from “recorded data known only to the subscriber.” In support of this rather restrictive interpretation, defendants point to the “Wall Street Week” example in the patent (‘490 C19L35-41), and observe that the exemplary system described there uses data concerning the subscriber’s stock portfolio. They also note applicants’ statement during prosecution that this “unique information is generated automatically at each subscriber station by a local computer that contains recorded data (known only to the subscriber).” (FH 000134).

There are several problems with defendants' proposal. First, it is clear that the words "known only to the subscriber" cannot be taken literally; certainly others (such as a broker, financial advisor, spouse) may be aware of the recorded data. Second, and more importantly, it is not at all clear from the context of the prosecution remarks that applicants were in any sense using the possibly private nature of the data as a distinction over the prior art. Rather, they appeared to be emphasizing the user specific nature of the data. Certainly the SM is unable to conclude that a person of ordinary skill in the art would regard those prosecution remarks as a clear disavowal of claim coverage broad enough to include generation of overlay signals from recorded data that was known to persons other than the subscriber.⁸⁴ An accused infringer cannot overcome the heavy presumption that a claim term takes on its ordinary meaning simply by pointing to the preferred embodiment.⁸⁵

The words "computer," "generate," and "transmit," are used in their ordinary sense. The parties do not identify ambiguity or conflicting dictionary definitions. Accordingly, this term **needs no construction. However, the Court may wish to instruct the jury that the word "adapted" is a term of art used in patent claiming connoting that the recited mechanism is capable of or suitable for achieving the recited functions.**

"Overlay video signals." Plaintiffs propose a complex definition requiring that the video signals be "generated from information not included in the television program transmission" and that the television receiver "combine the computer generated video signals with the television program transmission." (Joint Chart p. 1) Again, plaintiffs point to the exemplary embodiment in

⁸⁴ See York Prods., Inc. v. Central Tractor Farm & Fam. Ctr., 99 F.3d 1568, 40 USPQ2d 1619, 1624 Cir. 1996). Prosecution history statements cited as justification for narrowing claim scope must amount to a "a clear and unambiguous disclaimer of" a broader claim scope, Inverness Med. Switz. GmbH v. Princeton Biomeditech Corp., 309 F.3d 1365, 64 USPQ2d 1926, 1932 (Fed. Cir. 2002).

⁸⁵ Teleflex Inc. v. Ficosa North Am. Corp., 299 F.3d 1313, 63 USPQ2d 1374, 1382 (Fed. Cir. 2002).

the specification as supporting these extraneous requirements. But there is nothing in the specification that precludes the possibility that the overlay video signals be generated from information that is included in the television program transmission, or that the overlay video signals be combined with the television program by the computer. To import these examples from the specification into the claim to create limitations would violate the most fundamental rule of claim construction. As the Federal Circuit pointed out, sitting en banc in an early case:

If everything in the specification were required to be read into the claims, or if structural claims were to be limited to devices operated precisely as a specification-described embodiment is operated, there would be no need for claims. Nor could an applicant, regardless of the prior art, claim more broadly than that embodiment. Nor would a basis remain for the statutory necessity that an applicant conclude his specification with "claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112. It is the claims that measure the invention.⁸⁶

The ordinary meaning of this term is a video signal that comprises an overlay. This term needs no construction. However, the Court may feel that it would be of assistance to the jury to explain that such a signal is generated by the computer and transmitted to its associated receiver to present simultaneous display of the overlay and the television program.

"User specific information related to said program material." Although this phraseology is clear and unambiguous, defendants contend that certain positions taken by plaintiffs during prosecution result in a narrowing of the plain meaning, so that "user specific information" must be construed to mean information that is unique to the user and not known at the television programming source. Defendants point to a statement in the prosecution history that "this system displays user specific information that is private and unique to the subscriber and is neither known to the input source nor revealed at any other subscriber station." (FH 000134) In the

⁸⁶ SRI Int'l v. Matsushita Elec. Corp., 775 F.2d 1107, 227 USPQ 577, 585 (Fed. Cir. 1985).

opinion of the SM, this statement does not amount to a clear disavowal of the ordinary meaning of “user specific,”⁸⁷ which is information from or about a specific user. It is clear from the context of the statement that it was describing the system disclosed in the specification rather than the language of the claims. Accordingly, this term requires no construction.

“Unique user application” and “each display unique to a specific user.” Part of the support for defendants’ position (discussed above) on the meaning of “user specific information” derives from the fact that these two phrases – both employing the word “unique” – also appear in claim 4. Thus it is not unreasonable, at least on the face of things, to suggest that the word “specific” should be construed to mean “unique” when this claim is considered in its entirety. Closer analysis of the prosecution history, however, demonstrates that this suggestion is misplaced.

During prosecution of application claim 21, which became claim 4 of the patent, the applications amended the term “particular user application” to read “unique user application,” and also added the phrase “each display unique to a particular user.” (FH 000129-139) In the paper that effected those amendments, the applications stated that “[u]ser specific information means information which is unique to a user.” (FH 000138; emphasis present) However, in a paper dated February 12, 1987, the applicants further amended the claim (together with application claims 18 and 24) to change both occurrences of “unique” to “specific.” (FH 000192) They explained the reason for the amendment as follows (FH 000193-94):

This change is not intended to affect the scope of the claims but upon review of the application, it was realized that the term “unique” may convey the thought that the invention requires that the display at each of the subscribers must necessarily be different. Although, in the example given, this is typically the case since it is

⁸⁷ Defendants also point to additional prosecution statements to the effect that user specific information means information that is unique to a user. (See, e.g., FH 000137.) But such statements are inconsistent with, and clearly subordinate to, the circumstances surrounding the appearance and ultimate disposition of the words “specific” and “unique” during the prosecution of claim 4, as will be explained below.

highly unlikely that any two subscribers would have the same stock portfolio, it would appear to be self-evident that the invention would nevertheless apply to a situation where some number of subscribers had exactly the same portfolio. In that case, the user specific information displayed at the subscriber's television receiver would be the same for each of such subscribers. In that sense, arguably the information might not be "unique" although it would still be "specific".

Applicants believe that the Examiner will have no objection to this proposed change since clearly the invention is concerned with the display of user specific information as opposed to the display of "unique" information. In that sense, the proposed amendments may actually avoid a possible inconsistency.

There is no mistaking the clear import of this language. The applicants were telling the examiner, and potential competitors, that the claim was not to be construed as limited to information, applications, or displays that were unique to a specific user, at least in the sense that "unique" connotes "different from all others."

Apparently, this was acceptable to the examiner, for he immediately allowed the claims without comment. (FH 000198-99) In processing the amendment, the examiner duly made the changes in longhand to application claims 18, 21, and 24 (FH 000142-45), but for some inexplicable reason, the changes did not appear in claim 4 of the printed patent.⁸⁸ On October 25, 2000, the applicants filed a request for a Certificate of Correction under 37 C.F.R. §1.332 to correct this administrative error.⁸⁹ In the absence of this error, defendants' claim construction position would have very little going for it. The phrases in question would read "specific user application" and "each display specific to a specific user," and ordinary meaning would prevail.

The question then becomes, how to handle the error?

Very recently, this Court had occasion to consider a similar issue in ISCO Int'l Inc. v. Conductus Inc., (No. C.A. 01-487 GMS). Its Memorandum Opinion and Order, dated February

⁸⁸ The changes do appear in claims 1 and 7 of the printed patent, which correspond to the application claims 18 and 24.

⁸⁹ Apparently that request has not been acted upon by the PTO.

10, 2003⁹⁰ and reported at 2003 WL 276250 (D. Del.), the Court held that a plain typographical error in a claim should be disregarded for purposes of determining validity and infringement. In other words, the claim should be read as though the error had been corrected. Defendants assert (albeit in the context of one of the other patents in suit), that “Judge Sleet’s recent *ISCO* holding is inconsistent with Federal Circuit precedent and Congress’ non-retroactivity policy.” The SM disagrees. The case principally relied on by defendants held that a Certificate of Correction has only prospective effect – it cannot affect litigation pending at the time it is granted.⁹¹ This is a far cry from holding that errors in claim language that are apparent from the prosecution history and clearly the fault of the PTO cannot be taken into account during the claim construction exercise. Judge Sleet’s *ISCO* opinion cites, at note 5, many examples of courts, including the Federal Circuit, construing claims in a fashion that accounts for and rectifies such error.⁹² Indeed, the Manual of Patent Examining Procedure (MPEP) itself provides, in §1480, that “[i]f Office mistakes are of such a nature that the meaning intended is obvious from the context, the Office may decline to issue a certificate and merely place the correspondence in the patented file, where it serves to call attention to the matter in case any question as to it subsequently arises. Such is the case, even where a correction is requested by the patentee or patentee’s assignee.” This is the obvious explanation – and the only one supportable on this record – for the PTO’s failure to act on plaintiffs’ request for a certificate.

The presumption here is that the examiner did his or her job. In this instance, that job was to see whether the change from “unique” to “specific” impacted the patentability of claim 4. The presumption is that the examiner decided that it did not, and entered the amendment. It is

⁹⁰ The decision was adhered to on motion to reconsider; see Order of March 6, 2003.

⁹¹ See Southwest Software Inc. v. Harlequin Inc., 226 F.3d 1280, 56 USPQ2d 1161, 1172-74 (Fed. Cir. 2000).

⁹² See, e.g., Lemelson v. General Mills Inc., 968 F.2d 1202, 23 USPQ2d 1284, 1285 & n.3 (Fed. Cir. 1992).

certainly open to defendants to show, by clear and convincing evidence, that the examiner was wrong, and that the substitution of the word "specific" for "unique" calls into play invalidating prior art. But that possibility does not affect the construction that this claim must receive as a matter of law. Accordingly, these terms should be construed as though they read "specific user application" and "each display specific to a specific user," and the ordinary meaning of those words controls. The ordinary meaning of the word "application" in the context of this technology is "computer program."

"Transmitting a video signal containing a television program signal." On the face of things, it is difficult to see how anyone could quarrel about the ordinary meaning of this term. Certainly, the ordinary meaning of the term today would include both conventional analog television and digital television. However, as we have seen, the relevant time frame for the '490 patent is when it issued, in 1987.

Defendants argue that, due to the use of the term "video signal," this limitation should be construed to mean that the television program signal is a conventional analog television signal, thus excluding digital television transmissions. (DIB '490 pp. 22-25; Joint Chart p. 2) In support of this argument, they point to a technical dictionary definition dated at about the time the '490 patent issued (DIB '490, Ex. E), which they assert demonstrates that, at that time, "video" referred to conventional analog television. This, they say, raises the presumption (apparently in reliance on the Texas Digital decision⁹³) that digital television is excluded. Defendants' expert witness, Prof. Schreiber, pursued this theme. He testified that if a person of ordinary skill in the art read claim 4 in 1987, without having consulted the specification, he or she would have concluded that the limitation in question was referring to conventional analog television. The

⁹³ See note 11 and accompanying discussion.

specification would not have altered that conclusion, for (as plaintiffs concede) it does not describe digital television. But neither does the specification employ “expressions of manifest exclusion or restriction, representing a clear disavowal of” that claim scope.⁹⁴

Prof. Schreiber did allow that digital point-to-point television transmissions were employed in 1987 (Tr. 158), but defendants note that claim 4 speaks in terms of “communicating television program material to a multiplicity of receiver stations” (emphasis added), thus implying broadcast transmission, either over-the-air, by cable, or by satellite. Even plaintiffs’ expert, Prof. Dickinson, seemed to agree that digital television broadcasts were not a practical reality as of 1987 (Tr. 62, 68-72, 127-29).⁹⁵

Nonetheless, Prof. Schreiber’s own textbook (P-11),⁹⁶ published in 1986, casts substantial doubt upon the reliability of his conclusion that a person of ordinary skill would not, at the time the ‘490 patent issued, have regarded the words “video signal containing a television program signal” as comprehending digital as well as conventional analog television. Figure 1.2, appearing at page 12 of his book, purports to show a simple television system. It illustrates, as viable alternatives, a 4 megahertz analog channel and a 24 megabyte per second digital channel. This seems clearly to indicate that persons skilled in the art, and even their students, were then thinking in terms of analog and digital transmission techniques as viable alternatives for television.

Thus, the only potentially viable basis for construing this limitation to exclude digital television is the opinion of the Federal Circuit in Wang Labs. Inc. v. America Online Inc., 197

⁹⁴ See Teleflex Inc. v. Ficosa North Am. Corp., 299 F.3d 1313, 63 USPQ2d 1374, 1381 (Fed. Cir. 2002).

⁹⁵ The problem was apparently due to the regulatory allotment of a 6 megahertz bandwidth for a television channel. Propagating a video signal at a satisfactory bitrate in such a narrow bandwidth was not then practicable, and required further improvements in signal processing techniques, modems and other hardware, etc. (Tr. 55-59)

⁹⁶ WILLIAM F. SCHREIBER, FUNDAMENTALS OF ELECTRONIC IMAGING SYSTEMS (Springer-Verlag 1986).

F.3d 1377, 53 USPQ2d 1161 (Fed. Cir. 1999). The SM has puzzled privately and publicly⁹⁷ over the meaning of that decision and is no closer now to a satisfactory explanatory rationale than he was when the case came down over three years ago. The invention there had to do with apparatus for retrieving and processing frames of information from a central videotex supplier. At the time of the invention, several protocols existed for processing and displaying computer-generated data. They were of two general types: character-based protocols and bit-mapped protocols. The patent specification disclosed only character-based protocols. The district court construed the claim term "frame" to mean a page of information encoded in a character-based protocol. Inasmuch as the accused infringing systems, like most Internet systems, utilized bit-mapped protocols, they were held not to infringe.

The Federal Circuit affirmed, concluding that the district court had correctly construed the term "frame" as limited to character-based protocols. In so doing, it systematically rejected several serious and reasonable arguments by the patentee without providing much insight as to the underlying rationale for its decision. For example, in response to the patentee's argument that the character-based protocol was simply a preferred embodiment, and that the embodiment described in the specification does not set the boundaries of the claims, the appellate court offered a rather cryptic statement:

Although precedent offers assorted quotations in support of differing conclusions concerning the scope of the specification, these cases must be viewed in the factual context in which they arose. Whether an invention is fairly claimed more broadly than the "preferred embodiment" in the specification is a question specific to the content of the specification, the context in which the embodiment is described, the prosecution history, and if appropriate the prior art, for claims should be construed, when feasible, to sustain their validity. The usage "preferred" does not of itself broaden the claims beyond their support in the specification. * * * The only embodiment described in the '669 patent

⁹⁷ See Robert L. Harmon, "Must a Patent Describe an Accused Infringement?", J. Pat. & Tr. Off. Soc'y, Vol. 85, No. 2, pp. 153-171 (Feb. 2003).

specification is the character-based protocol, and the claims were correctly interpreted as limited thereto. 53 USPQ2d at 1165.

How this can be squared with the court's en banc pronouncement in SRI v. Matsushita,⁹⁸ is far from clear.

The appellate court also brushed aside the patentee's argument that it was irrelevant to the construction of the claims whether the specification contained an enabling description of any bit-mapped decoder, saying:

the claims are not properly construed to have a meaning or scope that would lead to their invalidity for failure to satisfy the requirements of patentability. * * * Although Wang is correct that a claim is not invalid simply because it embraces subject matter that is not specifically illustrated, in order to be covered by the claims that subject matter must be sufficiently described as the applicant's invention to meet the requirements of section 112. This requirement was not met as to protocols other than character-based. Id.

Again, the SM has struggled to understand the full import of this statement. Its reasoning appears circular, especially when one considers the court's more recent statement that the "question of enablement does not turn on whether the accused product is enabled. Rather, '[t]o be enabling, the specification of the patent must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation.'"⁹⁹

Attempting to apply the Wang v. AOL reasoning to the present circumstances is not a simple matter, largely because it is something of a chicken-and-egg proposition. We are told by defendants that claims must be construed to preserve their validity and that, consequently, we must construe the limitation in question here to exclude digital television because that technique

⁹⁸ "If everything in the specification were required to be read into the claims, or if structural claims were to be limited to devices operated precisely as a specification-described embodiment is operated, there would be no need for claims. Nor could an applicant, regardless of the prior art, claim more broadly than that embodiment. Nor would a basis remain for the statutory necessity that an applicant conclude his specification with 'claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.'" SRI Int'l v. Matsushita Elec. Corp., 775 F.2d 1107, 227 USPQ 577, 585 (Fed. Cir. 1985).

⁹⁹ Durel Corp. v. Osram Sylvania Inc., 256 F.3d 1298, 59 USPQ 1238, 1244 (Fed. Cir. 2001).

is not enabled. If nonenablement is the crucial factor in Wang v. AOL, then this argument has some force, for it is likely that digital television is not enabled in the '490 specification. But that question has to be decided; the SM cannot simply assume that enablement is lacking. And such an inquiry is beyond the scope of these proceedings.

What if adequacy of the written description is the crucial factor in Wang v. AOL? If a person of ordinary skill would understand from the specification that the employment of digital television signals was "sufficiently described as the applicant's invention" in the context of the claims at issue, it would be wrong to construe the claims so as to exclude it. Yet the adequacy of the written description is, like the scope of enablement, something that is beyond the charter of the SM in this proceeding.

When the Federal Circuit itself finds it necessary or desirable to distinguish Wang v. AOL, it appears to struggle. Thus, in one recent case, it offered this rationale: "Although we noted that the only system described and enabled in the specification used a character-based protocol, we also noted that the intrinsic evidence did not describe bit-mapped protocols as included in the invention, and a person skilled in the art would not have understood bit-mapped protocols to be included."¹⁰⁰ With all respect, this circular explanation is not very helpful. The court seems to do better when it offers to distinguish Wang v. AOL on the basis of statements in the prosecution history. As it said a few weeks ago:

The court [in Wang v. AOL] noted that the "only system that is described and enabled" in the patent specification "uses a character-based protocol," and that the specification's references to bit-mapped protocols did "not describe them as included in the applicant's invention, and that the specification would not be so understood by a person skilled in the field of the invention." Id. at 1382, 53 USPQ2d at 1164. Importantly for our analysis, the inventors disclaimed the broader construction in a statement during prosecution. Id. at 1383-84, 53 USPQ2d at 1165-66. Again this case is distinguishable, as the claims of the '593

¹⁰⁰ Teleflex Inc. v. Ficosa North Am. Corp., 299 F.3d 1313, 63 USPQ2d 1374, 1382 (Fed. Cir. 2002)

patent were neither amended, nor was a broader construction disclaimed by argument during prosecution.¹⁰¹

This sounds reasonable until one carefully analyzes the prosecution statement in Wang v. AOL.

As the court itself described it, 53 USPQ at 1165-66:

The prosecution history also supports the limitation to character-based frames. In an Information Disclosure Statement filed by Wang during the prosecution of the parent application, Wang distinguished a reference (Fleming) describing the NAPLPS system by stating that the reference "encodes pictorial information . . . on the pel [picture element] level, rather than on the character level." Wang argues that this statement was in the parent application and does not apply to the continuation-in-part that is the '669 patent. However, this subject matter is common to the continuation-in-part application, and argument concerning the Fleming reference was correctly viewed as applying to the common subject matter. * * * This history reinforces the conclusions that the inventors focused their invention, and the description and claims directed to that invention, on a character-based system, and that a person of skill in this field reading this history would so understand the explanation of the Fleming reference.

It is hard to see how this rather innocuous statement, made in an Information Disclosure Statement – rather than in an argument or in support of an amendment seeking to overcome an actual rejection by the examiner – can be equated with a “conspicuous and unambiguous”¹⁰² concession that the claims excluded bit-mapped protocols. Thus, the fact that applicants did not make such arguments during the prosecution of the '490 patent does not, in the view of the SM, necessarily take the patent out of the shadow cast by Wang v. AOL.

Another serious difficulty lies in deciding when Wang v. AOL applies and when it does not. If the case were to be read expansively, it could cover almost any situation where the language of a claim is broad enough to read on embodiments that are not supported and enabled by the specification. But such a reading would be wholly inconsistent with earlier cases like SRI v. Matsushita, which insists that an applicant may claim more broadly than the embodiment

¹⁰¹ Alteris Inc. v. Symantec Corp., Appeal Nos. 02-1137, -1138, (Fed. Cir. 02/12/03).

¹⁰² See Modine Mfg. Co. v. United States ITC, 75 F.3d 1545, 37 USPQ2d 1609, 1613 (Fed. Cir. 1996).

described in the specification,¹⁰³ and Teleflex v. Ficosa, that the number of embodiments disclosed in the specification is not determinative of the meaning of disputed claim terms.¹⁰⁴ In view of this, it is reasonable to conclude that Wang v. AOL is triggered only in certain special circumstances, as where the construction dichotomy – e.g., bit-mapped versus character-based – appears to be central to the claimed invention. In the present case, there is no denying that such a circumstance prevails. These patents are about television program transmissions, and it is essential for a competitor to know whether they cover digital television in addition to standard analog television.

Of course, this entire conundrum can be resolved by concluding that Wang v. AOL and similar cases¹⁰⁵ represent an anomaly in Federal Circuit jurisprudence concerning claim construction. The SM is reluctant to do that. Accordingly, it is suggested that the Court consider whether digital television is enabled and described as the applicants' invention within the meaning of §112 ¶1 before construing this limitation in light of Wang v. AOL. This could be done in association with dispositive motions (if such are permitted and filed) or at the jury instruction phase. Alternatively, should the Court conclude that Wang v. AOL is inapplicable here, it is recommended that the jury be instructed that this limitation should not be construed to exclude digital television.

"Transmitting an instruct-to-overlay signal." The ordinary meaning of these words is to transmit a signal; the signal is termed an "instruct-to-overlay" signal which in the context of the remainder of claim 4 simply means a signal that causes a computer to generate and transmit an overlay signal to an associated receiver. Defendants would limit the meaning to a specific

¹⁰³ See note 86.

¹⁰⁴ See note 85.

¹⁰⁵ See, e.g., Toro Co. v. White Consol. Indus. Inc., 199 F.3d 1295, 53 USPQ2d 1065 (Fed. Cir. 1999).

instrumentality that does the "transmitting" (i.e. the transmitter of a television signal),¹⁰⁶ and apparently to a process in which all overlay transmissions are simultaneous. (Joint Chart p. 2)

The first of these restrictions is simply an effort to import a limitation from the specification into the claim. Although the specification shows an example in which the television transmitter also transmits the instruct-to-overlay signal, nowhere in the specification is there an indication that the applicants intended to limit the claim to that example.¹⁰⁷ The claim is clearly written broadly enough to cover transmission of instruct-to-overlay signals from other sources, so long as they are not located at the receiver station.

The second restriction is not suggested in the excerpt from the prosecution history that defendants cite. (FH 000133-34) Although the patent disclosure may have contemplated virtually simultaneous transmission of overlay video signals in response to a single instruct-to-overlay signal transmitted by the television transmitter to all receiver stations, clearly this might not be the case if the instruct-to-overlay signal were generated by a source other than the transmitter of the television program material.

There is no legal warrant for limiting the clear import of this language in the manner suggested by defendants. **This limitation should be construed to mean transmission of a signal, from a source at a location other than the receiver station, that instructs a computer to generate and transmit an overlay signal to an associated receiver.**

"Related computer generated overlay." The parties differ over *what* the computer generated overlay is related *to*. Plaintiffs say it is the programming transmitted; defendants say it

¹⁰⁶ Indeed, defendants provide further interpretation of their proffered interpretation: "This means that the television program and instruct to overlay signal are transmitted from the same television transmitter, which is at [a] location different from the location of the receiver station." (Joint Chart p. 2)

¹⁰⁷ In Teleflex Inc. v. Ficosa North Am. Corp., 299 F.3d 1313, 63 USPQ2d 1374, 1381-83 (Fed. Cir. 2002), the court rejected the argument that where only one embodiment is disclosed in the specification, claim terms are limited to the embodiment disclosed.

is the programming *being* transmitted, thus implying almost a real-time relationship. (Joint Chart p. 2) In the context of the claim taken as a whole, defendants' version does not make much sense. The claim language is "to present a combined display consisting of the television program and the related computer generated overlay." To adopt defendants' proposed definition would mean that the overlay would have to vanish the instant the particular portion of the television program being broadcast became unrelated. This might well happen if the instruct-to-overlay signal were transmitted at the appropriate time by the source of the television transmission. But if the instruct-to-overlay signal were to be transmitted locally, a strict relationship between program content and overlay would be difficult, if not impossible, to maintain. **This limitation should be construed to mean that the overlay must be related to the television program in general rather than the specific portion of the program being transmitted at a given moment.**

F. The '825 Patent

Only claim 17 of the '825 patent is asserted; however, inasmuch as it depends upon parent claim 14, the limitations of claim 14 must also be construed. The disparity in position of the parties with regard to the limitations of these claims illustrates one of the very unfortunate aspects of most Markman proceedings. More often than not, the process tends to degenerate into the very exercise in redundancy that the Federal Circuit has warned against. The parties construct complex competing definitions, without real support in the intrinsic record, hoping thereby to bolster their ultimate positions on infringement and validity. It is sometimes difficult for the ultimate construer of claims – the court – to avoid the temptation of simply choosing the most plausible of these complexities, just to get the job over with and done. The SM has attempted to resist that temptation.

The parties' proffered constructions of the words of the asserted claim of the '825 patent create more problems than they solve. In particular, their suggested meanings and definitions introduce new ambiguities by adding words that themselves require construction and have no clear meaning in the context of the claim read as a whole.

"Information transmission." This term appears three times in claim 17 (by dependency on claim 14). It must of course be accorded the same definition for each use absent unusual circumstances, which are not present here. Defendants argue that these words mean

any transmission with information content including audio, video, television, radio, computer, data, control, or any other type of transmitted information whether transmitted by wire, radio frequency, optical, physical media or any other mode of transmission. (Joint Chart pp. 3-4)

It is not immediately apparent whether this convoluted definition is meant to be restrictive or expansive. What is immediately apparent, however, is that there is no warrant in the intrinsic patent record for engraving such definitional baggage onto the simple words "information transmission."

The ordinary meaning of this term, in its broadest sense, is a transmission that contains information. This could include such wildly disparate forms of communication as a television signal and a handwritten letter. However, inasmuch as the claim also requires that the information transmission be on a "carrier transmission," and be obtainable by demodulating the carrier transmission, it would be inappropriate to accord that broad a meaning. Accordingly, it is clear that the term must be limited to transmission of information that is modulated upon a transmitted electromagnetic waveform, and that construction is recommended.

It should be noted that the term "information transmission" can, in light of the specification ('825 C8), be understood to refer to the programming transmission. Accordingly, the same set of problems encountered with respect to the limitation "video signal containing a

television programming signal" in connection with claim 4 of the '490 patent is presented here.

The situation differs significantly in two respects, however. The '825 patent issued in 1990 rather than 1987, and its specification is vastly expanded over that of the '490 patent. These circumstances make it all the more likely that a person of ordinary skill in the art would not read "information transmission" to exclude digital television. Nonetheless, these differences do not dispose of the potential Wang v. AOL problem. Accordingly, it is recommended that the Wang v. AOL issue be handled in the same way for this limitation as for the '490 limitation.

Embedded signals on said information transmission." The term "embedded signals" is used several times in the claim. Plaintiffs seek a definition of "embedded" that is in some ways broad and in some ways narrow: "a digital signal transmitted in combination with the programming signal that can be separated from the programming signal." (Joint Chart p. 3) With all respect, this suggested definition is very confusing. Nothing in the claim suggests that the embedded signal be limited to a digital format. The claim does not use the term "programming signal." Most importantly, there is nothing in the intrinsic record to suggest that "embedded on" was intended to be synonymous with "in combination with."

For their part, defendants want the words "embedded signals" to mean

Signals enclosed within or made an integral part of the information transmission. The embedded signals cannot be separated inadvertently from the programming and must occur at precise times in the programming to synchronize the operation of the receiver station apparatus. (Joint Chart p. 3)

This definition too is confusing and unwarranted. The suggested words "enclosed within or made an integral part of" would themselves require construction, being alternatives without an immediately apparent rationale.

Nonetheless, it is clear that the term "embedded" has, in the context of an electromagnetic transmission, a technical meaning that may not accord with ordinary dictionary definitions. The question becomes what the phrase "embedded signals on said information transmission" really conveys to one of ordinary skill in the art, viewing this claim as a whole in the latter part of 1990 when it issued. Fortunately, a passage in the '825 patent goes a long way toward answering this question, because it tells us what the applicants meant to convey:

The present invention employs signals embedded in programming. Embedded signals provide several advantages. They cannot become separated inadvertently from the programming and, thereby, inhibit automatic processing. They occur at precise times in programming and can synchronize the operation of receiver station apparatus to the timing of programming transmissions. They can be conveniently monitored.

In the present invention, the embedded signals contain digital information that may include addresses of specific receiver apparatus controlled by the signals and instructions that identify particular functions the signals cause addressed apparatus to perform. ('825 C8)

It seems clear that a person of ordinary skill in the art, reading the term "embedded signals" in light of this description, would conclude that it means **signals that contain digital information (but are not limited to digital information) and that are associated with the information transmission in a such a way that (1) they cannot be inadvertently separated from that transmission and (2) occur at precise times in that transmission. That construction is recommended.**

"Decrypting an encrypted information transmission." Here it is the plaintiffs who are seeking to impose an extremely narrow construction of this straightforward terminology. Plaintiffs say that it means

to convert the information transmission into usable information in the clear by proper application of the key, which may include conventional descramblers if they are actuated by receiving digital key information. (Joint Chart p. 6)

This definition would create ambiguity not relieve it. Further construction would be required to know what is meant by “usable” and “in the clear” and “proper application of the key” and “conventional descramblers” and “digital key information.” Defendants’ proposal (“transforming an unintelligible information transmission into an intelligible form, such as through unscrambling, to provide the information transmission in an intelligible form”; Joint Chart p. 6), aside from its tautology, is not nearly as complex, although it does require further construction with respect to “intelligible” (intelligible to whom? or to what?) and “unscrambling.”

Again, the ordinary meaning of the words prevails, as it must where the specification gives no clear indication that something else was intended. The ordinary meaning of the word “decrypt” is “decode” or “decipher” and the ordinary meaning of the term in question is “decoding an encoded information transmission.” **This term needs no construction.**

G. The ‘414 Patent

Most of the contested limitations of the asserted claims 1, 2, 5, and 7 of this patent have already been construed in the context of §112 ¶6. However, there are some additional issues that must be addressed.

“A plurality of detector means” (claims 1 and 2) and “a control signal detector means” (claims 5 and 7). Claims 1 and 2 refer to “a plurality of detector means” twice; likewise for claims 5 and 7 and “a control signal detector means.” The first reference is in the context of a target destination to which the programming is sent from the receiver/distribution means, and the second reference defines the detector means in terms of its function (detecting control signals). Defendants argue that all of the claims are fatally indefinite and therefore invalid under §112 ¶2 because a person of ordinary skill in the art would not be able to tell whether the claim is referring to a single set of detector means or two sets.

Defendants' position is somewhat convoluted, but it seems to boil down to the proposition that if the applicants had wished to limit the claim to one set of detector means, they would have used the article "said" as a modifier the second time the term was employed; on the other hand, if the claims are interpreted to require two sets of detector means, they don't make any sense for, to use defendants' words, the second set would be "drifting in space * * * a disembodied aggregation of components." (DIB '414 pp. 5-8) Despite such nice imagery, the SM believes that defendants' position is clearly mistaken.

Based upon forty years of professional experience in reading, writing, and analyzing patent claims, the SM feels justified in taking notice that patent practitioners often use the definite article "said" (or even plain old "the") to modify the second occurrence of an antecedent element that was prefaced with the indefinite article "a" or "an." But this practice is in no way mandatory; it is merely typical. The question is always whether the claim makes grammatical sense as it is written.

Were it not for this typical practice, not followed in the claims of the '414 patent, it would be difficult to understand how defendants would have any argument at all. Surely the claims are crystal clear from a grammatical standpoint. First the claim refers to the detector means as a target to which programming is input, and then it identifies the function of the detector means. It is perfectly plain to any reader not steeped in patent law that only a single set of detector means is required. Does the failure to follow the typical practice here render the claims indefinite? Certainly defendants cite no legal authority for that remarkable proposition. And certainly they have not come forward with evidence that clearly and convincingly establishes that a person of ordinary skill in the art would not understand that the claims refer to a single set of detector means, which is the only logical reading of the claim language.

These limitations should be construed to mean that the claims require only a single set of detector means (claims 1 and 2) or control signal detector means (claims 5 and 7).

"Identifying." Somewhat surprisingly, the parties assert that this word needs construction. It is used in claims 1 and 2 in this context: "processor means * * * for identifying each detected control signal as having been detected by a particular detector means." Plaintiffs say it should be construed to mean "to ascertain or establish what a given thing is." (Joint Chart p. 9) Defendants say it means "making one thing correlative with another – that is, establishing a correlation between two things." (Joint Chart p. 8) There is no warrant in the intrinsic patent record for imposing those restrictive definitions here. Undoubtedly the word can mean both of the things the parties attribute to it, and have other meanings as well. Nothing has been advanced by either party that would justify selecting a particular one from among those various meanings. "Identifying" is a broad term and should be read in a corresponding broad way. As is usually the case in this report, the SM declines the invitation to elaborate on an otherwise clear term in a way that might confuse rather than illuminate. **This term needs no construction.**

"Control signals respecting said programming." Equally surprisingly, the parties hotly contest the meaning of this simple language. Plaintiffs say that the term "control signal" means "any signal that purposely affects the recording, processing, transmission, or interpretation of data by a system element." (PIB p. 88)¹⁰⁸ Defendants attempt to place their definition a little more in context, asserting that control signals "are detectable physical quantities or impulses (as a voltage, current or magnetic field strength) by which digital information is transmitted in programming, to permit stations that originate programming to control the handling, generating, and display of programming at receiver stations." (Joint Chart p. 27)

¹⁰⁸ Plaintiffs did not include this proposed definition in the portion of the Joint Chart dealing with the '414 patent. They did, however, proffer it in connection with the '277 patent. (Joint Chart p. 59)

These proposed definitions are worse than useless, for they introduce the distinct probability of confusion. They convert few words into many. They carry the seeds of possible inadvertent narrowing of the claims, and for no reason. Claims 1 and 2 of the '414 patent say nothing about the purpose or use of the control signals, and require only that they be detected, identified as having been detected, and stored. Claims 5 and 7 add the requirement that a portion of the control signals be transferred for further processing. The control signals, according to the plain language of the claims ("control signals respecting said programming"), need only be related somehow to the programming. Nothing further is required of them in the context of these claims, and no further definition is required to enable a person of ordinary skill in the art to understand what the claims mean. **This limitation needs no construction.**

"Location." This word is used in claim 5 in this context: "configured to detect said control signals at a pre-determined location within said programming." Later in this report, the meaning of the term "location" is discussed in the context of claim 7 of the '277 patent. The parties appear to be in agreement, with which the SM concurs, that the term should receive the same construction in both patents. (See PIB p. 88; DIB '414 p. 20 n.9) Accordingly, "location" should be construed to have the same meaning as in claim 7 of the '277 patent.

H. The '654 Patent

The asserted claims are 10 and 70. Claim 70 is dependent upon claim 66, which is in turn dependent upon claim 63, so the limitations of those claims must be analyzed as well. The only limitations that require construction have already been addressed in the context of §112 ¶6.

I. The '277 Patent

As explained previously, this patent has been before the Federal Circuit on an appeal from the U.S. International Trade Commission. See Personalized Media Comm. LLC v. United

States ITC, 161 F.3d 696, 48 USPQ2d 1880 (Fed. Cir. 1998). To reiterate, although this decision may not have strict preclusive effect under traditional principles of res judicata and collateral estoppel, its effect as precedent is inescapable. Accordingly, it is recommended that the construction given any pertinent claim limitations by the Federal Circuit be adopted here.

“Television program transmission.” The parties are not far apart in their views on this limitation. It would seem, at first look, that everyone knows what a television program transmission is. However, in Personalized Media, 48 USPQ2d at 1890, the Federal Circuit noted that “the specification uses this phrase to denote a single transmission enveloped within a single carrier wave. The specification does not suggest that a ‘television program transmission’ can be a multi-channel transmission * * *.” Although it is not clear that the Federal Circuit was adopting this as a claim construction, it does reflect the court’s view of what those words were intended to convey in the context of the intrinsic patent record. The SM notes that a television program transmission is a composite video signal that usually has three components – monochrome information, color information, and audio information – each with its own carrier frequency, that together comprise the television “channel.” (Schreiber Dec. ¶9) Thus, as defendants suggest, a more workable version of the Federal Circuit’s definition would be a single-channel transmission. Accordingly, it is recommended that “television program transmission” be construed to mean a single channel television transmission.¹⁰⁹

“Separately defined from standard analog video and audio television.” The parties leave no doubt about their divide on this limitation. Defendants say it can “include analog video and audio television transmissions with digital data embedded therein.” (Joint Chart pp. 44-45)

¹⁰⁹ The Court may also wish to instruct the jury that “channel” is not used in its secular sense, and is intended to encompass not only traditional broadcast TV channels, but modern orbital satellite channels that can, with digital compression techniques, accommodate multiple simultaneous video programming services. (See PRB p.45 & n.45 & Ex. C.)

Plaintiffs say it has to be “other than standard analog video and audio television.” (*Id.*) The question then becomes, of course, what is standard analog video and audio television? Even a satisfactory answer to that does not end the matter, however, for one must determine the meaning of “separately defined from.”

The parties appear to be in general agreement that, although “standard analog video and audio television” may have different meanings in different parts of the world (according to regulatory standards), the phrase does not include digital television. The term “separately defined from” can certainly mean, in its ordinary sense, “different from” or “other than.” The specification uses the term once (‘277 C21L62) in a way consistent with the ordinary meaning; thus, the “separately defined transmission” is routed to “a signal decoder that detects and processes signal information embedded in a frequency other than a television or radio frequency.” (‘277 C22L21-23) Moreover, the ordinary meaning appears to be consistent with other claims in the patent, such as claim 8, which speaks of a receiver system configured to receive both “an analog television transmission” and a “television program transmission that is separately defined from standard analog television.” **Accordingly, it is recommended that this limitation be construed to mean a television program transmission that is not a standard analog video and audio television transmission.**

Defendants also request a construction of this limitation that would exclude “non-line based MPEG compressed digital television transmissions.” (Joint Chart p. 45) This position is similar to their stand on the “video signal” limitation of claim 4 of the ‘490 patent, and the “information transmission” limitation of claim 17 of the ‘825 patent. There is no basis in any of the intrinsic patent documents for excluding digital television transmissions that are in “non-line based, MPEG-2 compressed” format. Indeed, those words themselves would need further

translation. But there is, in the case of the '490 and '825 patents, a question of whether the limitation can be construed broadly enough to comprehend digital television transmission of any kind. In this instance, the answer is much easier to come by. When one reads the claim as a whole, it is seen that the claimed system is for locating or identifying a specific signal. That specific signal is "in a television program transmission" and the television program transmission in question is said to be "separately defined from standard analog video and audio television." Inasmuch, as indicated above, the television program transmission in question is *not* a standard analog video and audio television transmission, it must necessarily include digital television transmissions. Thus, leaving for another day any questions of support or enablement, it is recommended that this limitation be construed to include digital television transmissions.

"Digital detector." As already indicated, the Federal Circuit in Personalized Media construed this limitation. It held that the term meant "a device that acts to detect the digital signal information in another stream of information." 48 USPQ2d at 1888. The parties are close to agreement that the Federal Circuit was right, but plaintiffs apparently want to substitute "a" for "another." (Joint Chart p. 45) The SM has trouble discerning what difference this would make. The use of "another" would not appear to introduce any ambiguity; the original stream of information containing the digital signal information is "another" to the stream of digital signal information. Accordingly, "**digital detector**" should be construed to mean a device that acts to detect the digital signal information in another stream of information.

"Detecting said specific signal at a specific location or time." Both sides appear to argue that the definition of "location" adopted by the Federal Circuit in Personalized Media Comm. LLC v. United States ITC, 161 F.3d 696, 48 USPQ2d 1880 (Fed. Cir. 1998) should prevail here. The problem comes in determining what that definition is. There the court clearly approved the

conclusion of the administrative law judge, found at page 88 of his Initial Determination and Recommendations, that “location, as the word is used in claim 6 [and 7] would include a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission.” The court specifically said:

The ALJ correctly construed the term “location” in accordance with the examples provided in the specification, viz., a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission, see ‘277 patent, col. 9, l. 61 to col. 10, l. 16, examples which involve only single channel transmissions. 48 USPQ2d at 490.

This seems plain enough. But the trouble is that the ALJ used the phrase “would include,” which is imprecise in that it does not appear to exclude other possibilities. The cited text in the specification does not appear to describe other examples, but it does not appear to exclude them either. And none of this was of particular concern for the Federal Circuit, for its focus was on the question of whether the “ALJ erred in construing the term ‘location’ to preclude selection of a control signal based on selection of a particular carrier wave in a multi-carrier transmission.” 48 USPQ2d at 489. It held that the ALJ’s construction in that respect was correct.

Thus, the SM is unable to read the Federal Circuit decision as approving a construction of the word “location” that would preclude locations other than the recited “line, or lines, or portion of a line * * * or a frequency * * *,” so long as it is understood that alternative locations would have to be part of a single-channel transmission. Accordingly, “location” should be construed to be a specific line or lines, or portion of a line in the vertical interval of a single-channel television video transmission, or a frequency within the audio range of a single-channel television transmission, or other location within a single-channel transmission.

Defendants proffer a further construction that would require the specific signal to be at a predetermined or preinformed location or time. (Joint Chart p. 45) They quote a portion of the

specification ('217 C9L37-47) that, in describing one of the purposes of the invention, refers to "techniques whereby the pattern of the composition, timing, and location of embedded signals may vary in such fashions that only receiving apparatus that are preinformed regarding the patterns that obtain at any given time will be able to process the signals correctly." While this language may contemplate an embodiment of the claimed invention, it in no way suggests that the invention is to be so limited. Again, defendants' position is nothing more than an invitation to import a limitation from the specification into the claim. Accordingly, this limitation should be construed in accordance with its ordinary meaning, except for the term "location" as discussed above.

Both sides appear to agree that the same definition of the word "detecting" should be adopted in all the patents in suit (see PIB p. 22; Joint Chart pp 25, 39, 46) and the SM concurs. Accordingly, "detecting" should be construed to have the same meaning as in the claims of the '414 and '654 patents: "extracting intelligence from a signal."

"Instructions to cause said processor to cause said detector to detect different signals."
Defendants argue that this limitation, appearing in claim 12 of the '277 patent, is indefinite. They ask (DIB '277 p. 22): "what are the newly detected signals different from (or different than) and in what sense are they different? Plaintiffs have a simple answer: the "different signals" are signals that would not have been detected absent the instructions. (Joint Chart p. 47) Certainly, this limitation is not insolubly ambiguous if one adopts plaintiffs' very reasonable construction. Accordingly, "different signals" in this context means signals that would not have been detected without instructions to the processor.

"Processing the received detected signals to identify how and where to pass said information." Plaintiffs suggest that this term needs no construction, and the SM concurs. The

terms “processor” and “detecting” have already been discussed and construed. In light of those constructions, the terms “processing” and “detected” need no further elaboration. **This limitation needs no construction.**

“Plurality of apparatus.” In patent law parlance as elsewhere, “plurality” refers to two or more items, absent some indication to the contrary.¹¹⁰ The parties agree, and the SM concurs, that this limitation should be construed to mean “multiple devices, each of which might be addressed or controlled by detected digital signals.” (Joint Chart p. 49)

“Addressed.” The full limitation is “transferring said detected signals to said apparatus that are addressed by said signals or to be controlled by said signals.” Both sides assert that the word “addressed” should get its ordinary meaning, but they seem to disagree about what that is. Plaintiffs say it means “directed to,” while defendants argue that it means “directed to or intended to be received by.” (Joint Chart p. 49) With all respect, the SM has great difficulty following defendants’ line of logic here. In particular, it is difficult to see how the concept of “being directed to” does not include the concept of “intended to be received by.” The parties also disagree, quite remarkably, on what is being addressed, even though the claim makes it clear that it is “apparatus.” Plaintiff seeks to make it “particular apparatus.” Again, this jousting illustrates the futility of restating every claim term in the hopes of one side or the other gaining a real or imagined advantage from a stray word or two. The SM, though not a person skilled in the technology at hand, has no trouble in understanding the ordinary meaning of the limitation. Transferring a detected signal to the apparatus it is addressed to is self-explanatory, like delivering a letter to the house it is addressed to. But adding the parties’ proposed embellishments makes the limitation less understandable, not more. If we adopt defendants’

¹¹⁰ Davco Prods. Inc. v. Total Containment Inc., 258 F.3d 1317, 59 USPQ2d 1489, 1497 (Fed. Cir. 2001).

approach, we then must ask how “directed to” differs from “intended to be received by.” If we adopt plaintiffs’ approach, we then must ask how “apparatus” differs from “particular apparatus.” Patent cases are hard enough for juries as it is, and there is nothing to be gained by making them harder, through the creation of extraneous and irrelevant word puzzles. **This limitation needs no construction.**

“Controller operatively connected to said decryptor for causing said decryptor to alter its decryption pattern or technique.” The term “decryptor” is introduced in claim 17 of the ‘277 patent. As indicated in connection with the ‘825 patent, the ordinary meaning of “decrypt” is “decode” or “decipher” and the ordinary meaning of a decryptor is thus a device that decodes or deciphers, in the context of this claim, detected signals that have been encrypted. However, the remainder of the limitation invites some considerations in addition to those discussed in connection with the ‘825 patent.

Defendants propose a fairly elaborate definition of “decryption pattern” as “the predetermined pattern of the composition, timing and location of the embedded signal whereby the pattern is used to accomplish decryption of the embedded signal.” (Joint Chart p. 51) Plaintiffs, on their side, say that the term is clear as is, but if it is to be construed, it “could include a decryption key.” (*Id.*) Plaintiffs are right; “decryption pattern” *could* include a decryption key. But it need not, according to the plain language of the claim.

Similarly, defendants propose that “decryption technique” be interpreted to mean “an overall method used to accomplish decryption,” while plaintiffs say that, although it needs no construction, it “could include a decryption algorithm.” (Joint Chart p. 51) Right again. The technique *could* include an algorithm but it need not, according to the plain language of the claim.

Nonetheless, the disjunctive use of the words "pattern" and "technique" creates an ambiguity, for it is not immediately apparent whether there is a difference between the two terms and, if there is, what the difference may be. Accordingly, it is necessary to turn to the specification to determine whether the ambiguity is resolved there.

It is clear that the purpose of encryption in the context of this technology is to prevent unauthorized users from attaining access to the information content of the transmissions. As the patent explains it, "[f]lexibility must exist for varying techniques that restrict programming to duly authorized subscribers in order to identify and deter pirates of programming." ('277 C11L24-27) The specification goes on to tell us that

In the prior art, various means and methods exist for regulating the reception and use of electronically transmitted programming. Various scrambling means are well known in the art for scrambling, usually the video portion of analogue television transmissions in such a fashion that only subscriber stations with appropriate descrambling means have capacity to tune suitably to the television transmissions and display the transmitted television image information. Encryption/decryption means and methods, well known in the art, can regulate the reception and use of, for example, digital video and audio television transmissions, digital audio radio and phonograph transmissions, digital broadcast print transmission, and digital data communications. Other techniques, well known in the art, involve controlling interrupt means that may be as simple as on/off switches to interrupt or disconnect programming transmissions at stations that lack authorizing information or are determined in other fashions not to be duly authorized. Still other techniques, also well known in the art, involve controlling jamming means that spoil transmitted programming at stations that lack authorizing information or are determined not to be duly authorized, thereby degrading the usefulness of said programming. Such other techniques include, for example, inserting so-called "noise" into the transmitted programming which noise may be, for example, overlays of one or more separate transmissions. ('277 C156L61-C157L20)

Among the purposes of the invention is to "provide a variety of means and methods for restricting the use of transmitted communications to only duly authorized subscribers. Such means and methods include techniques for encrypting programming and/or instructions and decrypting them at subscriber stations. They also include techniques whereby the pattern of the

composition, timing, and location of embedded signals may vary in such fashions that only receiving apparatus that are preinformed regarding the patterns that obtain at any given time will be able to process the signals correctly." ('277 C9L37-47) This sounds like the inventors are attempting to distinguish encrypting techniques from techniques that vary the pattern of the composition, timing, and location of embedded signals. Finally, when the specification gets down to talking about the specific embodiment, it has this to say:

The means and methods of the present invention for regulating reception and use of programming relate, in particular, to three features of the present invention. The computer system of the present invention has capacity at each subscriber station to compute station specific information based on preprogrammed information that exists at each station and that differs from station to station. Given this capacity, any central control station of the present invention that originates a SPAM transmission can cause subscriber station apparatus to decrypt received SPAM information in different fashions with each station decrypting its received information in its own station specific fashion. A central station can cause different stations to compute different station specific decryption cipher keys and/or algorithms to use in any given step of decryption or to compute station specific key and/or algorithm identification information that differs from station to station and controls each station in identifying the key and/or algorithm to use for any given step of decrypting. A second feature of the present invention is that effective SPAM processing depends on the correspondence between the transmitted SPAM information that causes processing at the subscriber stations and the information preprogrammed at the various stations that controls the SPAM processing at each station. * * * The third feature of the present invention is an extended system of means and methods for regulating the reception and use of SPAM information – including decryption key and algorithm information – that is illustrated in FIG. 4 and discussed more fully below.

By themselves, the first and second features provide a technique whereby a message such as the second message of the "Wall Street Week" program can take affect at only selected stations (such as those stations preprogrammed with decryption key J) without being decrypted at said stations. (Hereinafter, this technique is called "covert control.") ('277C157L21-C158L3)

Based upon these passages, it seems likely that the applicants intended, when they used the terms decryptor and decryption in the claims, to exclude alternative methods such as varying the pattern of the composition, timing, and location of embedded signals. It also seems likely that

they did not intend for those terms to encompass known scrambler/descrambler apparatus unless that apparatus actually works on a principle of coding and decoding according to an algorithm, using a key.¹¹¹ Indeed, the most reasonable view of the specification, considering all of the many, many occurrences of the word-forms "decrypt," "technique," and "pattern," is that the inventors were telling those skilled in the art that, when they encountered those words in the claims, they should understand them to mean respectively "decode," "algorithm," and "key."

This, rather than some broader understanding.

Neither of the parties' experts will be perfectly comfortable with this definition. Prof. Dickinson suggested that "key" should be defined as some finite set, to distinguish conventional descramblers (Tr. 202-06, 214-16). This, with all respect, would be more likely to confuse the jury than assist it. Defendants' expert, Mr. Stubbs, attempted to make "technique" synonymous with an "overall method to accomplish decryption." But this broke down when he admitted that changing either the algorithm or the key, both of which he regarded as included in the "pattern," would likewise change the "technique," thus rendering the terms "pattern" and "technique" redundant. (Stubbs Declaration, ¶35: "Based on the meaning of 'decryption technique as discussed above, a change in the 'decryption technique' can be accomplished by changing any of the 'decryption pattern' (i.e., the algorithm, key, composition, timing and location of embedded signals) and/or other aspects of the overall method of decryption * * *"; Tr. 282)

Accordingly, it is recommended that this limitation be construed to mean that the controller causes the decryptor to alter its decoding algorithm or key. The Court may wish to instruct the jury that algorithm means a process or set of rules to be followed in

¹¹¹ For example, the patent refers to "conventional descramblers, well known in the art, that scramble analog television transmissions and are actuated by receiving digital key information." ('277 C174L66-C175L1; emphasis added.)

calculations or other problem-solving operations, especially by a computer, and that key, in this context, means a variable that is used in the algorithm.

J. The '243 Patent

The Related Prosecutions

At the outset, it bears repeating that defendants have made a painstaking analysis of the prosecution of many of the related applications that are pending in the PTO. The results of this analysis are reflected in the Broderick declarations and the appendix to their responsive brief on the '243 patent. The very limited role that such evidence has to play in this Markman proceeding requires some explanation.

The first paragraph of 35 U.S.C. §112 demands "a written description of the invention." The written description must be detailed enough to enable one of ordinary skill in the art to practice the invention, and it must also provide support for the limitations of the claim.¹¹² In evaluating a written description for claim support, "[t]he description must be sufficiently clear that persons of skill in the art will recognize that the applicant made the invention having those limitations."¹¹³ The second paragraph of §112 requires that the claim particularly point out and distinctly claim the subject matter that the inventor regards as his invention. This "definiteness inquiry focuses on whether those skilled in the art would understand the scope of the claim when the claim is read in light of the rest of the specification."¹¹⁴ Thus, it is entirely possible that the fact that several examiners in the prosecution of related applications rejected, on grounds of indefiniteness, claims that were the same as or similar to those at issue here might have relevance to a facial attack on the '243 claims under §112¶2. Similarly, the fact that, as alleged by

¹¹² E.g., Enzo Biochem Inc. v. Gen-Probe Inc., 296 F.3d 1315, 63 USPQ2d 1609 (Fed. Cir. 2002).

¹¹³ Martin v. Mayer, 823 F.2d 500, 3 USPQ2d 1333, 1337 (Fed. Cir. 1987).

¹¹⁴ Union Pac. Res. Co. v. Chesapeake Energy Corp., 236 F.3d 1625, 57 USPQ2d 1293, 1297 (Fed. Cir. 2001).

defendants, the applicants have taken inconsistent positions with respect to specification support for identical or similar limitations in the course of the various prosecutions, might have relevance to an attack on the adequacy of the written description under §112¶1. But those issues are beyond the scope of the Court's reference to the SM.

Defendants make an argument that has at least some superficial appeal. Essentially, their argument is that, when required by PTO examiners in related prosecutions to identify specification support for claim limitations, the applicants repeatedly adopted positions inconsistent with their positions on support for the same or similar limitations in the present litigation. They particularly focus on certain limitations of the '243 claims. From this they argue that:

Where, as here, a patentee (or applicant) keeps shifting his story when asked by an adverse litigant (or by the PTO) to identify his specification support for claim language identical to that which is here in issue, the fact that he fails, again and again, to give a stable, consistent answer suggests that *the alleged inventor himself does not really know what the answer is, because he does not really know what the claim reads on*. This is the very definition of claim indefiniteness -- that a person experienced in the field of the invention would *not* understand the scope of the subject matter that is claimed when the claim is read in conjunction with the specification. (See Plaintiffs' Opening Brief ("Pls.' Br.") at 25 and 32 n.13.) The fact that the patentee/applicant keeps changing his story about where in the specification the applicable written description lies is a damning fact -- not only because it suggests that an adequate written description does not exist, but also, and more importantly for today's purposes, because it suggests that he cannot figure out what his own claim covers. (DRB '243 pp. 2-3; emphasis present)

The deficiencies in this argument are immediately apparent. First, it presumes that there can only be a single example of support in the specification for a given claim limitation. But that would be true only if it were clear, to a person of ordinary skill in the art, that the alternative examples relied on in various prosecutions by the applicants were somehow mutually exclusive. That, obviously, is something that cannot and should not be resolved in the context of a claim construction proceeding.

Second, this argument ignores the current claim construction methodology of the Federal Circuit, which is to attempt to discern ordinary meaning without reference to the specification, and to refer to the specification only thereafter, either to resolve lingering ambiguities or to determine whether the inventor has altered or disavowed the ordinary meaning. Specification support has little to do with that exercise. For example, with respect to the “instruct-to-react signal” limitation in claim 21 of the ‘243 patent, defendants assert that it “is not a term of art, did not and does not have any conventionally recognized and understood meaning in the art at the relevant time period, and is not defined nor explicitly explained in the specification.” (DRB ‘243 p. 19) From this they conclude that, “[s]ince the phrase is not commonly understood, nor defined or clearly explained in the specification, claim 21 fails as indefinite.” (Id. at p. 26) But this tidy logical construct fails to take into account the possibility that the *ordinary meaning of the words themselves* – never mind the lack of any special meaning in the art, or contrary inventor lexicography in the specification – clearly informs the reader what is meant. As will be seen below, that is exactly the case with respect to the term “instruct-to-react signal.”

That leaves the one issue to which the prosecution of the related applications might be relevant here: claim construction. It is of course true that, when multiple patents derive from the same initial application, the prosecution history regarding a claim limitation in any patent that has issued applies with equal force to subsequently issued patents that contain the same claim limitation.¹¹⁵ But that does not describe the precise situation at bar. Here, defendants are offering evidence of prosecution transactions in applications that have not yet issued as patents. Thus, the only evidence relating to claim construction is the positions that the applicant and the PTO may have taken with respect to the meaning of claim language that is identical or similar to that being

¹¹⁵ Biovail Corp. Int'l v. Andrx Pharm. Inc., 239 F.3d 1297, 57 USPQ2d 1813, 1816 (Fed. Cir. 2001).

contested in the '243 claims. Considered in this light, the real relevance is not that plaintiffs adopted a particular position regarding claim construction during related prosecution. Rather, the relevance emerges only if such a position appears to be inconsistent with a position that plaintiffs are taking here. And even then, it is difficult to see how such evidence could be regarded as conclusive, for we are again mindful that claim construction is an obligation of the court that is independent of the views asserted by the adversary parties.¹¹⁶

Nonetheless, evidence of clear inconsistency on the part of plaintiffs might well be regarded as a significant factor in arriving at a legal conclusion on claim construction, even though not determinative. The SM suspects that the Court had this in mind when it advised the parties that

it would serve the interests of justice for the Court to know whether inconsistent positions have been taken by the plaintiff before the PTO. It may well serve the interests of all concerned in this courtroom today to have someone appointed who could devote his or her time exclusively to this issue. (Broderick II ¶9)

It seems highly likely, also, that the Court was not interested in identification of possible inconsistencies in relation to invalidity defenses like indefiniteness and lack of support, but only in relation to the task at hand: claim construction.

Plaintiffs argue that reference to these transactions from related prosecutions is inappropriate on two grounds: they are extrinsic evidence and they are hearsay. (PRB pp. 78-80) Neither of these objections has any merit. Any statements that applicants made in the related prosecutions are not being offered for their truth, because the truth of the assertion is immaterial here. They are, rather, being offered simply to show that they were in fact made, after which defendants will attempt to demonstrate that they are inconsistent with the present positions taken by plaintiffs. Thus, the statements are not hearsay. There is no question but that these statements

¹¹⁶ Exxon Chem. Patents Inc. v. Lubrizol Corp., 64 F.3d 1553, 35 USPQ 1801, 1802 (Fed. Cir. 1995).

are extrinsic. As plaintiffs point out, the related prosecution histories are not part of the public patent record until the patents issue; they would be unavailable to those who might be interested in their possible impact upon construction of the claims of the patents in suit. Nonetheless, extrinsic evidence is not legally forbidden territory in claim construction. If evidence of a transaction from a related prosecution clearly demonstrates that plaintiffs are speaking from both sides of their collective mouths about the meaning of a particular claim term, it is something the Court may well want to know about, extrinsic or no. The impact of any such inconsistencies has to be dealt with on a limitation-by-limitation basis.

General Observations Regarding Patent Claim Jargon

The claims of the '243 patent are written in what might be called – in an effort to avoid a more pejorative term – “patentese.” That is to say, they are not likely to be readily understood by persons unused to reading patent claims. Although this is not atypical, the problem strikes the SM as particularly acute in the case of the '243 patent. Indeed, it may well be at the heart of defendants’ generalized attack on the adequacy of the claims under 35 U.S.C. §112 ¶2.

With the expectation that some of this “patent lawyer jargon” may confound the jury if left untranslated, the SM has in a few instances proposed plain English alternatives that the Court may wish to include in the jury instructions.

Generalized Indefiniteness Arguments.

In addition to their specific indefiniteness arguments about the typographical errors in claims 14 and 21, defendants mount a more general attack on the overall language and structure of the '243 claims. This presents a more serious question of compliance with §112 ¶2, for it comprehends much more than obvious misprints or typographical errors – it questions the underlying logical framework of the claims themselves, and suggests that those skilled in the art

would not understand what is being claimed. This amounts to a direct facial attack on the validity of the '243 claims.

In analyzing defendants' position on this matter, the SM has been mindful of Judge Sleet's admonition in the Pharmastem case that a Markman proceeding should not be regarded as the appropriate vehicle for dispositive rulings pursuant to §112¶2. Accordingly, the question at hand is whether the '243 claims are sufficiently definite to survive claim construction. Only if the SM should conclude, in the words of the Exxon case, that the claims are "insolubly ambiguous, and no narrowing construction can properly be adopted,"¹¹⁷ would the SM be justified in recommending that the Court consider their validity, under §112¶2, in the context of an appropriate dispositive motion.

As will be seen below, the SM finds no insoluble ambiguities in any of the specific limitations of the claims. Whether the claims, read in their entirety in view of the recommended construction of those specific limitations, adequately set forth the subject matter that the applicants regarded as their invention, is quite another question, for another day. Suffice to say here that the claims can be construed, and thus meet the Pharmastem test.

One is tempted to try to illustrate the lack of insoluble ambiguity by constructing a wholesale "translation" of these claims into language that might be more understandable to laypersons who are not patent lawyers. But such an approach is inapplicable to the actual construction of the claims. It is not the function of the courts to rewrite patent claims. Courts cannot alter what the patentee has chosen to claim as the invention. No matter how great the temptations of fairness or policy making, courts do not rework claims. They only interpret them.¹¹⁸

¹¹⁷ Exxon Res. & Eng'g Co. v. United States, 265 F.3d 1371, 60 USPQ2d 1272, 1276 (Fed. Cir. 2001).

¹¹⁸ Intervet Am. Inc. v. Kee-Vet Labs. Inc., 887 F.2d 1050, 12 USPQ2d 1474, 1476 (Fed. Cir. 1989).

Construction of Specific Terms

“Subscriber station information.” Plaintiffs argue that this phrase is not a limitation because it appears in the preamble of claim 14. (PRB pp. 94-95) The SM disagrees, because it appears to lie at the heart of the claimed invention, which is a method of communicating subscriber station information. That said, there is no warrant for giving the words anything other than their ordinary meaning, which is information to, from, or about a subscriber station. **This limitation needs no construction.**

The parties have agreed that a “subscriber station” includes “local affiliate broadcast stations that receive and retransmit single network transmissions; cable system headends that receive and retransmit multiple network and local broadcast station transmissions; and media centers in homes, offices, theaters, etc. where subscribers view programming.” (Joint Chart pp. 53-54) Although the SM is leery of using dozens of words where one or two will do, on the possibility that something may be excluded thereby, or that the jury may become confused, in this particular instance no potential for real harm is apparent. **Accordingly, the Court may wish to so instruct the jury.**

“Remote data collection stat [sic: station] and “process or [sic: processor].” It is clear from the prosecution history that the term “stat” found its way into claim 14 as a result of a typographical or printing error; it should have been printed as “station.” (See FH 001733, 001932) So too with “process or” in claim 21; it should have been one word: “processor.” (See FH 001936) Both sides agree. (PIB pp. 143, 159; DIB ‘243 p. 30) Nonetheless, defendants’ initial brief on the ‘243 patent devotes some five pages (pp. 30-34) to the remarkable proposition that the claims must be construed with obvious errors intact and “in that form they are indefinite

under 35 U.S.C. §112 ¶2.” (DIB ‘243 p. 33) The discussion earlier in this report dealing with a similar error in claim 4 of the ‘490 patent is fully applicable here, and disposes of this contention. Accordingly, the word “stat” in claim 14 should be read to mean “station” and the words “process or” in claim 21 should be read to mean “processor.”

“One of a viewer’s and a participant’s reaction.” Defendants argue vigorously and at length that a reader of this claim cannot know the difference, if any, between a “viewer” and a “participant,” or even what they are. (DRB ‘243 pp. 9-13) They obviously feel strongly about this issue, for they employ such words as “bizarre,” “grotesque,” “outlandish,” “farce,” and “preposterous” to describe plaintiffs’ efforts to illustrate how claim 14 is supported by the specification. The problem with defendants’ position here, however, is just that. Whether a claim limitation is supported by the specification and what it means to a person of ordinary skill are two entirely different questions. Plaintiffs may indeed run into serious trouble if they are ever required to explain what the specification provides in the way of support for the terms “viewer” and “participant.” That is a matter upon which the SM expresses no views.

But the task at hand is to determine what these ordinary words mean in the context of the claim. A viewer is one who views. A participant is one who participates. To worry about precisely what is being viewed or participated in is, in the context of claim 14, is simply not an issue, for the claim later tells us: “a mass medium program.” **This limitation should be construed to mean the reaction of a viewer of a mass medium program, or of a participant in a mass medium program.**

“Information that designates one of an instruct signal to process and an output to deliver in consequence of subscriber input.” Defendants’ principal attack on this limitation invokes what it calls the “inoperativeness conundrum.” (DIB ‘243 pp. 23-24) Basically this goes as follows:

The received information must designate either an instruct signal to process or an output to deliver. If it designates the former, then the 4th step of the claim ("processing said instruct signal) can be completed. If, however, the received information designates only the "output to deliver," then the 4th step cannot take place, for there is no instruct signal to process. This, according to defendants, renders the claim inoperative and, apparently, indefinite as a consequence. The SM disagrees. All that defendants are doing is pointing out that if the accused infringing system never receives (or is incapable of receiving) information that designates an instruct signal to process, *it will not constitute an infringing use of the method defined by the claim.* Nothing could be more definite than that. **This limitation needs no construction; however, the Court may wish to instruct the jury that the information designates an output to deliver or a signal that is an instruction to be processed.**

"Processing said instruct signal which is effective to coordinate presentation of at least a mass medium program segment with a predetermined presentation sequence at said subscriber station in consequence of said step of determining." The parties agree that "coordinate" may relate to "time, location (place), fashion of playing, or manner of presentation." (Joint Chart p. 57). Against, although the SM sees no ambiguity in the word, it does not appear that these embellishments are likely to confuse the jury. On the other hand, defendants propose a very complex definitional alternative to the term "predetermined presentation sequence," citing specific examples from the specification. (*Id.*) Although there is no reason the jury could not be advised, through testimony and argument, that these examples correspond with the claim term, it seems dangerous to adopt such examples as definitions for purposes of claim construction.

The SM does feel that it might be well to attempt to eliminate the "patentese" from this limitation. Accordingly, it is recommended that this limitation be construed to mean that,

after determining the presence of subscriber input, the instruct signal is processed in a way that coordinates (with relation to time, location, place, fashion of playing, or manner of presentation) the presentation at the subscriber station of a mass medium program segment with a predetermined presentation sequence (any set of presentations in a predetermined sequence).

"Detecting one of the presence and the absence of one of a broadcast and a cablecast control signal." This opening step of claim 21 is pretty straightforward, and once the arguments of the parties are analyzed, their positions seem to be converging. The only real bone of contention has to do with the juxtaposition of the words "broadcast" and "cablecast." As discussed at length in connection with the "broadcast transmission means" limitation of the '414 patent, the specification is ambivalent, sometimes appearing to use "broadcast" as a synonym for "wireless," and sometimes in a more generic sense that would encompass both wireless and cablecast transmissions. In the context of claim 21 of the '243 patent, however, there can be little doubt as to what was meant. "Broadcast" does not mean "cablecast" because the consequent redundancy would render the limitation nonsensical. How could a choice be made between them if they were one and the same thing?

The parties are in agreement that, in the context of this limitation, "detecting" means simply determining the presence or absence of a control signal, and does not invoke all of the definitional baggage accompanying the use of the term in other claims of the patents in suit. According, it is recommended that this limitation be construed to mean determining the presence or absence, at the receiver station, of a control signal sent by wireless or cablecast transmission.

"Instruct-to-react signal." Defendants make a vigorous attack on this term, asserting that it has no specification support, citing numerous instances of alleged evasiveness by plaintiffs and much evidence of alleged inconsistency in dealing with this term in related patent prosecution. (DRB '243 pp. 27-31) They also argue that the term is indefinite. But as indicated previously, these are matters for another day. The question at hand is whether the limitation is insolubly ambiguous, and if it is not, how it is to be construed.

In the context of claim 21 as a whole, the SM finds the term to be self-defining. Its ordinary meaning is a signal that comprises an instruction to react. The claim makes it clear that the instruction is input to the processor in response to detecting either the presence or the absence of a broadcast or cablecast control signal. In response to that input, the processor outputs specific information that causes coordination of a program segment and a presentation sequence. Thus, any signal that would have this purpose and function is an instruct-to-react signal within the meaning of the claim. **This limitation needs no construction.**

Similarly, as used in claims 14 and 41, the term "instruct signal" is a signal that comprises an instruction. **This limitation needs no construction.**

"Datum designating one of a television channel and a television program" and "one of a television channel and a television program designated by said processed datum."
Dependent claim 30 adds the following limitations to claim 21: "wherein said processor processes a datum designating one of a television channel and a television program, said method further comprising the step of controlling a video recorder/player to one of record and play one of video and audio contained in said one of a television channel and a television program designated by said processed datum." To the uninitiated, this is quite a mouthful. Although it is typical "patentese," and therefore readily understandable to those used to reading claims, it may

be a bit much for a jury to decipher. "Datum" means nothing more than a piece of information.

Accordingly, the Court may wish to instruct the jury that this phrase simply means that the processor processes a piece of information that designates either a television channel or a television program, and the video recorder/player is controlled to record or play the video or audio contained in the television channel or television program that was so designated.

Respectfully submitted,

**Robert L. Harmon
Special Master**



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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION

PERSONALIZED MEDIA
COMMUNICATIONS, L.L.C.,

Plaintiff,

v.

SCIENTIFIC-ATLANTA, INC. and
POWERTV, INC.,

Defendants.

CIVIL ACTION

NO. 1:02-CV-824-CAP

SCIENTIFIC-ATLANTA, INC. and
POWERTV, INC.,

Counter-Plaintiffs,

v.

PERSONALIZED MEDIA
COMMUNICATIONS, L.L.C.;
GEMSTAR-TV GUIDE INTERNATIONAL,
INC.; TVG-PMC, INC.; and
STARSIGHT TELECAST, INC.,

Counter-Defendants.

GEMSTAR-TV GUIDE INTERNATIONAL,
INC.; TVG-PMC, INC.; and
STARSIGHT TELECAST, INC.,

Cross-Claimants,

v.

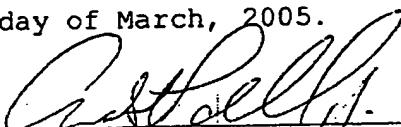
PERSONALIZED MEDIA
COMMUNICATIONS, L.L.C.,

Cross-Defendant.

O R D E R

The parties having consented to making all but page 263 of the Special Master's Report and Recommendations [Doc. No. 291] public, as reflected by the signatures of their counsel on the attached Stipulation Regarding Confidentiality of Special Master's Report and Recommendations on Claim Construction ("Stipulation"), and good cause having been shown, the Stipulation [Doc. No. 290] is hereby ACCEPTED and made an order of the Court. The clerk will substitute the attached redacted version of page 263 for the original version of page 263 and make the Special Master's Report and Recommendations [Doc. No. 291] as redacted available to the public. The original version of page 263 will remain under seal.

SO ORDERED, this 11 day of March, 2005.



CHARLES A. PANELLI, JR.
United States District Judge

**THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION**

**PERSONALIZED MEDIA
COMMUNICATIONS, L.L.C.,**

Plaintiff,

v

**SCIENTIFIC-ATLANTA, INC. and
POWER-TV, INC.,**

Defendants.

**SCIENTIFIC-ATLANTA, INC. and
POWER-TV, INC.,**

Counter-Plaintiffs,

V.

PERSONALIZED MEDIA
COMMUNICATIONS, L.L.C.;
GEMSTAR-TV GUIDE
INTERNATIONAL, INC.; TVG-PMC,
INC.; and STARSIGHT TELECAST,
INC.,

Counter-Defendants.

**GEMSTAR-TV GUIDE
INTERNATIONAL, INC.; TVG-PMC,
INC.; and STARSIGHT TELECAST,
INC..**

Cross-Claimants.

v.

PERSONALIZED MEDIA COMMUNICATIONS, L.L.C.,

Cross-Defendants.

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Hunton & Williams LLP

**SPECIAL MASTER'S
REPORT AND RECOMMENDATION
ON
CLAIM CONSTRUCTION
ISSUED UNDER SEAL**

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I. Introduction

A. Nature of the Suit

Personalized Media Communications, L.L.C. (“PMC”), and Gemstar-TV Guide International, Inc., TVG-PMC, Inc. and Starsight Telecast, Inc., (collectively, “Gemstar”), assert seven related patents against Scientific-Atlanta, Inc. (“S-A”), and PowerTV, Inc. (“PowerTV”), namely, U.S. Patent Nos. 4,694,490, 4,704,725, 4,695,825, 5,109,414, 5,233,654, 5,335,277, and 5,887,243. All seven of those patents issued to John Harvey and James Cuddihy (“Harvey *et al.*”), and bear the same title: “Signal Processing Apparatus and Methods.”

B. Referral to the Special Master

This Court’s Order of July 24, 2003, appointed the undersigned as special master in this case on the issue of claim construction. The special master’s Order of November 14, 2003, set out the procedure for, and scheduling of, the claim construction or *Markman*¹ hearing. In accordance with those orders, a *Markman* hearing was held in Atlanta, Georgia, in the Richard B. Russell Federal Building and Courthouse on February 4-6, 2004. The parties presented testimony, arguments and exhibits said to bear on disputed issues of claim construction. A record of that hearing has been prepared and filed with the court. The parties thereafter submitted post-hearing briefs that were intended to summarize the claim construction issues in dispute.

After reviewing the transcript of that hearing as well as the exhibits and briefs offered by both parties, and pursuant to the foregoing Orders and Rule 53, Federal Rules of Civil Procedure, the special master issues the following report and recommendation on claim construction.

C. Issued Under Seal

Some of the parties’ exhibits were designated as having been filed under seal. This report and recommendation is likewise designated “FILED UNDER SEAL.” However, the public nature of these proceedings should be preserved to the fullest extent possible. Therefore, the parties are

¹ *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996).

strongly encouraged to promptly advise the Court whether this report and recommendation may be released from seal either entirely or with appropriate redaction.

D. Brief History of the Patents-In-Suit

U.S. Patent No. 4,694,490 ("Harvey I") issued on September 15, 1987, from application Ser. No. 317,510 filed on November 3, 1981. Harvey I issued with thirteen claims.

U.S. Patent No. 4,704,725 ("Harvey II") is a continuation of the application maturing into Harvey I. Harvey II issued on November 3, 1987, from continuation application Ser. No. 829,531 filed February 14, 1986. Harvey II issued with five claims.

U.S. Patent No. 4,965,825 ("Harvey III"), a continuation-in-part ("CIP") of the application maturing into Harvey II, issued on October 23, 1990, from application Ser. No. 96,096 filed September 11, 1987. The Harvey III specification (including claims) fills 312 columns – approximately 287 columns longer than that of Harvey II. Harvey III issued with 25 claims.

U.S. Patent No. 5,109,414 ("Harvey IV") is a continuation of the application maturing into Harvey III. Harvey IV issued on April 28, 1992, from continuation application Ser. No. 588,126 filed September 25, 1990. Harvey IV issued with 26 claims.

U.S. Patent No. 5,233,654 ("Harvey V") is a continuation of the application maturing into Harvey IV. Harvey V issued on August 3, 1993, from continuation application Ser. No. 849,226 filed March 10, 1992. Harvey V issued with 71 claims.

U.S. Patent No. 5,335,277 ("Harvey VI"), a continuation of the application maturing into Harvey V, issued on August 2, 1994, from continuation application Ser. No. 56,501 filed May 3, 1993. Harvey VI issued with 56 claims.

U.S. Patent No. 5,887,243 ("Harvey VII") is a continuation of the application maturing into Harvey VI. Harvey VII issued on March 23, 1999, from continuation application Ser. No. 480,060 filed June 7, 1995. Harvey VII issued with 45 claims.

II.
Related Matters and General Comments

A. Joint Motion For Leave To Submit Joint Summary Of Disputed Claim Terms

After the *Markman* hearing, the parties submitted, along with their Joint Summary, a Joint Motion For Leave To Submit Joint Summary Of Disputed Claim Terms [Docket No. 191] ("Joint Motion"), dated February 26, 2004. In that motion, the parties state that they were not able to complete their Joint Summary in time for filing on February 23, 2004. The parties' Joint Motion provides a helpful summary of the various claim construction issues in this case, and is therefore GRANTED.

B. General Comments

According to footnotes 2 and 3 of the Joint Summary of Disputed Claim Terms ("Joint Summary"), the parties' respective post-*Markman* hearing proposed claim constructions vary to some extent from the proposed claim constructions originally set out in the pre-hearing Joint Claim Construction Statement. Having granted the parties' Joint Motion, the master has accordingly relied on the parties' Joint Summary for the parties' final statement as to (1) which terms are in dispute, and (2) the parties' respective proposed constructions for those disputed terms.

C. Motions Regarding *Markman* Exhibits

On February 3, 2004, the day before the *Markman* Hearing, the defendants filed their Emergency Motion In Limine To Exclude Undisclosed Demonstrative Exhibits From The *Markman* Hearing And To Strike Unmarked Exhibits [Docket No. ____] ("Motion In Limine"), in which they complained that the plaintiffs had produced a "jumbled mix of unmarked documents that contain no way for the Special Master or the witness to reference those documents." *Id.* at 3. The defendants urged that was contrary to the special master's Order of November 14, 2003. During the *Markman* hearing, the plaintiffs explained that they had misunderstood that Order, and had only produced documents that had not previously been produced. *Markman* Tr. at 8:25 to 13:4.

The special master's Order required the parties to "exchange all claim construction exhibits, including any demonstrative exhibits, PowerPoint presentations *etc.*, not previously exchanged" no

later than February 2, 2004. Order at 4. Also, the Order required that “[a]ny exhibits used at the hearing must be pre-marked, in binders permitting easy reference by witnesses, and exchanged in accordance with the foregoing schedule,” and that “[e]xhibits, including all demonstratives and PowerPoint or similar electronic video presentations, that have not been included as brief appendices or exchanged pursuant to the foregoing schedule shall not be introduced or referenced during the *Markman* hearing. All electronic presentations must be reduced to hard copy and presented as a hearing exhibit with the electronic original. To the extent that such presentations include animations, moving images and the like, the hard copies must reflect the same.” Order at 15-16.

The point of the Order was to allow the parties to review each others’ exhibits and raise objections, if necessary. The Order thus applied to all exhibits in whatever form – and regardless of whether the exhibit was simply a page of a patent specification or deposition transcript highlighted by DecisionQuest or similar presentation software. The Order was clear. Electronic exhibits/presentations used by the plaintiffs that were not provided to the defendants according to the Order are therefore excluded from the *Markman* record. Defendants’ Motion in Limine is thus GRANTED to that extent.

Otherwise, materials that had been “previously exchanged” as part of “brief appendices” and provided to the special master, but otherwise not formally marked as *Markman* hearing exhibits, are nevertheless not excluded from the *Markman* record. Those materials are considered to substantially fall within the terms of the Order.

D. Nomenclature for Briefs, Exhibits and Other Documents Cited Herein

In the interest of brevity, several lengthy citations/references have been abbreviated, as set forth below.

1. Joint Party

1. Joint Claim Construction Statement (“JCCS”).
2. Joint Claim Construction Statement, Exh. A, Pltf’s Detailed Claim Construction Charts, ‘490 Patent (Harvey I) (“Plaintiffs’ Harvey I Chart”).

3. Joint Claim Construction Statement, Exh. A, Pltf's Detailed Claim Construction Charts, '725 Patent (Harvey II) ("Plaintiffs' Harvey II Chart").
4. Joint Claim Construction Statement, Exh. A, Pltf's Detailed Claim Construction Charts, '825 Patent (Harvey III) ("Plaintiffs' Harvey III Chart").
5. Joint Claim Construction Statement, Exh. A, Pltf's Detailed Claim Construction Charts, '414 Patent (Harvey IV) ("Plaintiffs' Harvey IV Chart").
6. Joint Claim Construction Statement, Exh. A, Pltf's Detailed Claim Construction Charts, '654 Patent (Harvey V) ("Plaintiffs' Harvey V Chart").
7. Joint Claim Construction Statement, Exh. A, Pltf's Detailed Claim Construction Charts, '277 Patent (Harvey VI) ("Plaintiffs' Harvey VI Chart").
8. Joint Claim Construction Statement, Exh. A, Pltf's Detailed Claim Construction Charts, '243 Patent (Harvey VII) ("Plaintiffs' Harvey VII Chart").
9. Joint Claim Construction Statement, Exh. B-1 (Dfdt's Claim Construction Charts, Harvey I) ("Defendants' Harvey I Chart").
10. Joint Claim Construction Statement, Exh. B-2 (Dfdt's Claim Construction Charts, Harvey II) ("Defendants' Harvey II Chart").
11. Joint Claim Construction Statement, Exh. B-3 (Dfdt's Claim Construction Charts, Harvey III) ("Defendants' Harvey III Chart").
12. Joint Claim Construction Statement, Exh. B-4 (Dfdt's Claim Construction Charts, Harvey IV) ("Defendants' Harvey IV Chart").
13. Joint Claim Construction Statement, Exh. B-5 (Dfdt's Claim Construction Charts, Harvey V) ("Defendants' Harvey V Chart").
14. Joint Claim Construction Statement, Exh. B-6 (Dfdt's Claim Construction Charts, Harvey VI) ("Defendants' Harvey VI Chart").

15. Joint Claim Construction Statement, Exh. B-7 (Dfdt's Claim Construction Charts, Harvey VII) ("Defendants' Harvey VII Chart").
16. Joint Summary of Disputed Claim Terms ("Joint Summary").

2. PMC/Gemstar

1. Plaintiffs' Joint *Markman* Brief in Support of Their Statement of Claim Construction ("Plaintiffs' Opening *Markman* Brief").
2. Plaintiffs' Joint *Markman* Reply Brief in Support of Their Statement of Claim Construction ("Plaintiffs' Reply Brief").
3. Plaintiffs' Joint *Markman* Post-Hearing Brief ("Plaintiffs' Post-Hearing *Markman* Brief").

3. Defendants

1. Memorandum of Scientific-Atlanta, Inc. and PowerTV, Inc. in Support of Claim Construction ("Defendants' Opening *Markman* Brief").
2. Rebuttal Brief of Scientific-Atlanta, Inc. and PowerTV, Inc. in Support of Claim Construction ("Defendants' Reply Brief").
3. Post-Hearing Brief of Scientific-Atlanta, Inc. and PowerTV in Support of Claim Construction ("Defendants' Post-Hearing *Markman* Brief").

4. Other

1. In the Matter of Certain Digital Satellite System (DSS) Receivers and Components Thereof, ITC No. 377-TA-392 ("ITC Opinion").
2. Transcript of proceedings of the *Markman* hearing in this case ("*Markman* Tr.").

III. Claim Construction

A patent is a fully integrated written instrument. *Markman v. Westview Instrs., Inc.*, 52 F.3d 967, 978 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996). A patent, by statute, must provide a written description of the invention, a disclosure that would enable one of ordinary skill in the art to make and use the invention, and a disclosure of the best mode known to the inventor for practicing the invention. 35 U.S.C. § 112(1).² A patent must also contain claims “particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112(2). The claims of a patent provide the measure of a patentee’s right to exclude others from practicing the claimed invention. 35 U.S.C. § 154.

Patent claims, as properly interpreted in light of the specification and prosecution history, provide a public notice function. *Merrill v. Yeomans*, 94 U.S. 568, 573-74 (“It seems to us that nothing can be more just and fair, both to the patentee and to the public, than that the former should understand, and correctly describe, just what he has invented, and for what he claims a patent.”). See also *Tate Access Floors, Inc. v. Interface Architectural Res., Inc.*, 279 F.3d 1357, 1367 (Fed. Cir. 2002) (“Fairness and the public notice function of the patent law require courts to afford patentees the full breadth of clear claim language, and bind them to it as well.”). Parties frequently, though, disagree over how specific terms or phrases in patent claims should be interpreted or construed.

Accordingly, the court is obliged to resolve such disputes and to “construe” the claims to determine their true meaning and scope. *Markman*, 52 F.3d at 976. That is typically referred to as “claim construction,” and is a matter of law for the court on the rationale that “it is only fair (and statutorily required) that competitors be able to ascertain to a reasonable degree the scope of the patentee’s right to exclude” and that “competitors should be able to rest assured, if infringement litigation occurs, that a judge, trained in the law, will similarly analyze the text of the patent and its

² 35 U.S.C. § 112(1) provides:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

associated public record and apply the established rules of construction, and in that way arrive at the true and consistent scope of the patent owner's rights to be given legal effect." 52 F.3d at 978-79.

"The role [of claim construction] is neither to limit nor to broaden the claims, but to define, as a matter of law, the invention that has been patented." *Netword, LLC v. Centraal Corp.*, 242 F.3d 1347, 1352 (Fed. Cir. 2001). In construing the claims, courts are not permitted to re-write the claims. *See Chef Am., Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1373 (Fed. Cir. 2004)(in construing the term "heating the resulting batter-coated dough to a temperature in the range of about 400° F. to 850° F," the court explained "courts may not redraft claims, whether to make them operable or to sustain their validity. * * * Thus, in accord with our settled practice we construe the claim as written, not as the patentees wish they had written it. As written, the claim unambiguously requires that the dough be heated to a temperature range of 400° F. to 850° F" – even if "the resultant product of such heating will be something that, in the words of one of the attorneys in this case, resembles a charcoal briquette."); *Becton Dickinson & Co. v. C.R. Bard Inc.*, 922 F.2d 792, 799 n.6 (Fed. Cir. 1990)(“Nothing in any precedent permits judicial redrafting of claims.”). Rather, “[c]laim construction’ is the judicial statement of what is and is not covered by the technical terms and other words of the claims.” *Netword*, 242 F.3d at 1352.

All of that being said, there are, of course, decisions from the Federal Circuit that differ somewhat on the role played by the written description³ in claim construction. As the Federal Circuit explained recently: “We have had many occasions to cite one or both of the twin axioms regarding the role of the specification in claim construction: On the one hand, claims ‘must be read in view of the specification, of which they are a part.’ * * * On the other hand, it is improper to read a limitation from the specification into the claims. * * * Although parties frequently cite one or the other of these axioms to us as if the axiom were sufficient, standing alone, to resolve the claim construction issues we are called upon to decide, the axioms themselves seldom provide an answer, but instead merely frame the question to be resolved.” [Citations omitted.] *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 904 (Fed. Cir. 2004).

³ The written description requirement too has created some divisions among the Federal Circuit. *See Univ. of Rochester v. G.D. Searle & Co.*, 375 F.3d 1303 (Fed. Cir. 2004)(on order denying a petition for rehearing *en banc*, concurring opinions by Circuit Judges Lourie and Dyk, dissenting opinions by Circuit Judges Rader and Linn).

Also, panels of the Federal Circuit have voiced disagreement over the proper role of the specification in claim construction. For example, Circuit Judge Newman writing in dissent in *Housey Pharms., Inc. v. AstraZeneca UK Ltd.*, 366 F.3d 1348, 1356-57 (Fed. Cir. 2004)(Newman, J. dissenting), noted:

The panel majority propounds the rule that the “plain and ordinary meaning of the claim language” should be used to define the scope of the claims unless the inventor “has explicitly disclaimed or clearly disavowed this meaning.” *** The panel majority states that absent such disclaimer, claims are “inimical to any narrower construction.” *** Precedent is exactly contrary: a claim is “inimical” to any broader construction than the invention set forth in the specification, and reliance on dictionaries, even technical dictionaries, without due consideration of the context of the invention may lead to “absurd results” ***

*** Claims to an invention that is not described in the specification are an anachronism. Many inventions concern complex and detailed technology, and the terse style of the patent claim is not a replacement for the elaboration in the written description. The claims are the concluding portion of the specification, and their statutory function is “particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112. A claim has no meaning out of the context of the invention that is described, enabled, and prosecuted. [Citations omitted.]

Judge Newman also observed:

This case again illustrates the conflict generated in the court’s recent jurisprudence of claim construction. The panel majority reinforces the recently created dominance of general definitions, wherein the court created a “heavy presumption” in contravention of precedent. It is an established rule of the construction of legal documents that technical terms are presumed to have the meaning of the technical field of the document, not a “general meaning.” Technical terms take their meaning from the technology and context in which they are used, not from general usages of the same word. Thus terms in patent claims are understood in the technical/scientific context of the specification; the presumption is that they have their technical meaning, not a general meaning.

366 F.3d at 1357. See also *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1373 (Fed. Cir. 2004)(Schall, J. concurring-in-part, dissenting-in-part)(“If the meaning of a claim term is clear on its face, consideration of the remaining intrinsic evidence is restricted to determining if a deviation from the clear language of the claim is specified.”); *Nystrom v. Trux Co., Inc.*, 374 F.3d 1105, 1120 (Fed. Cir. 2004)(Gajarsa, J. dissenting-in-part)(“The majority gives heed to the general rules of

construction but then proceeds to ascertain the 'plain and ordinary meaning' of the term 'board' from various dictionaries. * * * It establishes a duel between dictionary definitions and then selects one of the various definitions to support its results. The majority fails to recognize that the written description and the prosecution history clearly prescribe that the decking board of the invention is derived from a wood log.”).

It is also noted that the Federal Circuit, on July 21, 2004, granted a petition for rehearing *en banc* in *Phillips v. AWH Corp.*, 376 F.3d 1382 (Fed. Cir. 2004), and has invited the parties, and interested *amicus curiae*, to file briefs addressing the following questions:

1. Is the public notice function of patent claims better served by referencing primarily to technical and general purpose dictionaries and similar sources to interpret a claim term or by looking primarily to the patentee's use of the term in the specification? If both sources are to be consulted, in what order?
2. If dictionaries should serve as the primary source for claim interpretation, should the specification limit the full scope of claim language (as defined by the dictionaries) only when the patentee has acted as his own lexicographer or when the specification reflects a clear disclaimer of claim scope? If so, what language in the specification will satisfy those conditions? What use should be made of general as opposed to technical dictionaries? How does the concept of ordinary meaning apply if there are multiple dictionary definitions of the same term? If the dictionary provides multiple potentially applicable definitions for a term, is it appropriate to look to the specification to determine what definition or definitions should apply?
3. If the primary source for claim construction should be the specification, what use should be made of dictionaries? Should the range of the ordinary meaning of claim language be limited to the scope of the invention disclosed in the specification, for example, when only a single embodiment is disclosed and no other indications of breadth are disclosed?
4. Instead of viewing the claim construction methodologies in the majority and dissent of the now-vacated panel decision as alternative, conflicting approaches, should the two approaches be treated as complementary methodologies such that there is a dual restriction on claim scope, and a patentee must satisfy both limiting methodologies in order to establish the claim coverage it seeks?
5. When, if ever, should claim language be narrowly construed for the sole purpose of avoiding invalidity under, e.g., 35 U.S.C. §§ 102, 103 and 112?
6. What role should prosecution history and expert testimony by one of ordinary skill in the art play in determining the meaning of the disputed claim terms?

7. Consistent with the Supreme Court's decision in *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996), and our *en banc* decision in *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448 (Fed. Cir. 1998), is it appropriate for this court to accord any deference to any aspect of trial court claim construction rulings? If so, on what aspects, in what circumstances, and to what extent?

It is further noted that Circuit Judge Rader, in a concurring opinion to that order, expressed his view that “[t]o provide completeness in the *en banc* proceeding, this court should receive commentary on the following question as well”:

Is claim construction amenable to resolution by resort to strictly algorithmic rules, e.g., specification first, dictionaries first, etc.? Or is claim construction better achieved by using the order or tools relevant in each case to discern the meaning of terms according to the understanding of one of ordinary skill in the art at the time of the invention, thus entrusting trial courts to interpret claims as a contract or statute?

Chief Judge Mayer filed a dissenting opinion from that order reflecting a deeper disagreement with the court's current claim construction analysis. Chief Judge Mayer wrote:

Until the court is willing to reconsider its holdings in *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995) (*en banc*), *aff'd on other grounds*, 517 U.S. 370 (1996), and *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448 (Fed. Cir. 1998) (*en banc*), that claim construction is a pure question of law subject to *de novo* review in this court, any attempt to refine the process is futile. Nearly a decade of confusion has resulted from the fiction that claim construction is a matter of law, when it is obvious that it depends on underlying factual determinations which, like all factual questions if disputed, are the province of the trial court, reviewable on appeal for clear error. To pretend otherwise inspires cynicism. Therefore, and because I am convinced that shuffling our current precedent merely continues a charade, I dissent from the *en banc* order.

It is impossible to predict, of course, how the *en banc* Federal Circuit will resolve those questions. Accordingly, the resolution of those questions *may* – or *may not* – affect the following recommended constructions. In general, the following report summarizes the disclosure of the patents-in-suit, as well as the prosecution history that the parties have provided. In terms of claim construction, the recommended construction begins with the actual claim language, and attempts to discern how one of ordinary skill in the relevant art in the relevant time frame would have understood the disputed terms and phrases in the asserted claims. Various objective resources, including technical

and other dictionary definitions, as well as the submissions of the parties, have been used as aids in that attempt.

The following recommended constructions also, however, attempt to account for the fact that claims are not, in fact or theory, interpreted as divorced from the specification of which they are a part. That is, claim construction does not require one to adopt a construction that, in effect, would result from physically cutting the claims from the patent-in-suit, and asking one of ordinary skill in the art to interpret such claims in a vacuum. No case authority exists for such an analysis.

On the other hand, claim constructions that depend too heavily on, or that are limited to the embodiment or embodiments disclosed in the specification, similarly may not reflect the true and accurate scope of the claimed invention. The specification, by statute, no doubt concludes with the claims, 35 U.S.C. § 112(2), but the claims, not the specification, define “the subject matter which the applicant regards as his invention.” *Id.*

In general terms, therefore, claim construction is not “primarily a dictionary exercise.” To simply focus on a definition from a selected dictionary, or perhaps on a sentence or two plucked from the written description or prosecution history, would invite error. While there may be some “inherent tension” involved in claim construction, *see E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369 (Fed. Cir. 2003), the various principles of claim construction recited by the parties have not been viewed as necessarily polarized, but rather as a collection of guidelines that as a group assist in ascertaining proper claim scope. Those guidelines too must be considered in the context of the cases in which they have been articulated. By definition, a valid patent describes and claims a novel and non-obvious invention. Guidelines applicable to how an inventor chose to describe her invention in one case may – or may not – be equally applicable in a case involving a different technology, specification, drawings and claims.

Moreover, claim construction is not an exact science. Reasonable minds may not always agree on how a claim term or phrase should be construed, as perhaps exemplified by the foregoing cases. Nevertheless, the task of the Court is to determine how one of ordinary skill in the art would have reasonably construed a disputed term or phrase, and to do so based on the record and re-

sources available to the court. Toward that end, the Federal Circuit has provided both procedural and substantive guidance, as discussed below.

A. Patent Claims

The Federal Circuit has instructed the courts that “[t]he actual words of the claim are the controlling focus.” *Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1344 (Fed. Cir. 1998). The actual words of the claims, however, are viewed in conjunction with the patent specification of which they are a part and the public record of the exchanges between patent applicants and the U.S. Patent and Trademark Office (“PTO”), namely, the prosecution history: “It is well-settled that, in interpreting an asserted claim, the court should look first to the intrinsic evidence of record, *i.e.*, the patent itself, including the claims, the specification and, if in evidence, the prosecution history * * *. Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language.” *Bell Atl. Network Servs., Inc. v. Covad Communications Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001), quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

Procedurally, though, the Federal Circuit has instructed trial courts to look first to the claim language itself to define the scope of the patented invention, *id.*, and, as a starting point, to give claim terms their ordinary and accustomed meaning as understood by one of ordinary skill in the art. “The claim construction analysis begins with the words of the claim.” *Int'l Rectifier Corp. v. IXYS Corp.*, 361 F.3d 1363, 1369 (Fed. Cir. 2004). See also *Hockerson-Halberstadt, Inc. v. Avia Group Int'l, Inc.*, 222 F.3d 951, 955 (Fed. Cir. 2000); *Ferguson Beauregard/Logic Controls v. Mega Sys., LLC*, 350 F.3d 1327, 1347 (Fed. Cir. 2003)(Rader, J. concurring) (“This court often uses the term ‘ordinary and customary meaning.’ While the ‘ordinary’ meaning, often represented by the first listing in a reputable dictionary, can occasionally have relevance to construing terms in a patent claim, this court’s case law requires primary reliance on the ‘customary’ meaning. The ‘customary meaning’ of a term in a patent claim links the inquiry to the understanding of one of ordinary skill in the art at the time of invention.”). “Consulting the written description and prosecution history as a threshold step in the claim construction process, before any effort is made to discern the ordinary and customary meanings attributed to the words themselves, invites a violation of our precedent counseling against importing limitations into the claims.” *Texas Digital*, 308 F.3d at 1204. That is, claims are construed

through the “viewing glass” of a person skilled in the art. *Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1332 (Fed. Cir. 2001). See also *Eastman Kodak Co. v. Goodyear Tire & Rubber Co.*, 114 F.3d 1547, 1554 (Fed. Cir. 1997). Accordingly, a technical term used in a patent is interpreted as having the meaning a person of ordinary skill in the field of the invention would give such term in the relevant art at the time of invention, unless the specification or prosecution history indicates that the inventor adopted or advocated a different meaning for such term. See *Metabolite*, 370 F.3d at 1360 (“The touchstone for discerning the usage of claim language is the understanding of those terms among artisans of ordinary skill in the relevant art at the time of invention. * * * Thus, this court sets the meaning of claim terms by ascertaining their technological and temporal context.”); *SmithKline Beecham Corp. v. Apotex Corp.*, 365 F.3d 1306, 1313 (Fed. Cir. 2004) (“Claim interpretation requires the court to ascertain the meaning of the claim to one of ordinary skill in the art at the time of invention. * * * This task requires the court to place the claim language in its proper technological and temporal context. The best tools for this enterprise are the various forms of intrinsic evidence and, when appropriate, extrinsic evidence.”). See also *Nat'l Recovery Techs., Inc. v. Magnetic Separation*, 166 F.3d 1190, 1195 (Fed. Cir. 1999). “Absent a special and particular definition created by the patent applicant, terms in a claim are to be given their ordinary and accustomed meaning.” *Renishaw PLC v. Marposs Societa' Per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998).

The Federal Circuit has held that dictionaries and technical treatises may, in appropriate circumstances, be considered along with other intrinsic evidence in resolving the disputed meaning of claim terms. *Vitronics*, 90 F.3d at 1584 n.6. “When a patent is granted, prosecution is concluded, the intrinsic record is fixed, and the public is placed on notice of its allowed claims. Dictionaries, encyclopedias and treatises, publicly available at the time the patent is issued, are objective resources that serve as reliable sources of information on the established meanings that would have been attributed to the terms of the claims by those of skill in the art. Such references are unbiased reflections of common understanding not influenced by expert testimony or events subsequent to the fixing of the intrinsic record by the grant of the patent, not colored by the motives of the parties, and not inspired by litigation. Indeed, these materials may be the most meaningful sources of information to

aid judges in better understanding both the technology and the terminology used by those skilled in the art to describe the technology.” *Texas Digital*, 308 F.3d at 1203.⁴

However, the Federal Circuit has also explained that abstract dictionary definitions are not necessarily determinative of the meaning of claim language. *Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1300 (Fed. Cir. 2003); *DeMarini Sports, Inc. v. Worth, Inc.*, 239 F.3d 1314, 1324 (Fed. Cir. 2001)(“We cannot look at the ordinary meaning of the term ‘frame’ in a vacuum”). Accordingly, the Federal Circuit has cautioned against over-reliance on dictionary definitions alone in construing claims:

Words are used in many senses and often have diametrically opposed meanings, depending upon the sense in which they are used *** But the words in which a claim is couched may not be read in a vacuum. One need not arbitrarily pick and choose from the various accepted definitions of a word to decide which meaning was intended as the word is used in a given claim. The subject matter, the context, etc., will more often than not lead to the correct conclusion.

Liebscher v. Boothroyd, 258 F.2d 948, 951 (C.C.P.A. 1958). The court in *Texas Digital*, although emphasizing the role that objective sources, such as dictionaries, may properly play in claim construction, nevertheless explained that courts must also consider the intrinsic evidence to determine what meaning is most consistent with the way the inventor used a term. 308 F.3d at 1203.

The Federal Circuit has also cautioned against the use of non-scientific dictionaries to define technical terms “lest dictionary definitions *** be converted into technical terms of art having legal, not linguistic significance.” *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1478 (Fed. Cir. 1998). Non-technical dictionaries, of course, may be used as a guide to the intended or ordinary meaning of non-technical terms being used in a non-technical context, or even technical terms being used in an “ordinary way.” See *Dow Chem. Co. v. Sumitomo Chem. Co., Ltd.*, 257 F.3d 1364, 1373 (Fed. Cir. 2001)(“technical terms often have an ‘ordinary meaning’ as understood by one of ordinary skill in the art, although these same terms may not be readily familiar to a judge, or may be familiar only

⁴ The *Texas Digital* court went on to say, “As resources and references to inform and aid courts and judges in the understanding of technology and terminology, it is entirely proper for both trial and appellate judges to consult these materials at any stage of a litigation, regardless of whether they have been offered by a party in evidence or not. Thus, categorizing them as ‘extrinsic evidence’ or even a ‘special form of extrinsic evidence’ is misplaced and does not inform the analysis.” *Id.*

in a different context.”). But, general-usage dictionaries are not helpful where artisans in the field attach a special meaning to a claim term – or no meaning at all. *See Vanderlande Indus. Nederland BV v. United States Int’l Trade Comm’n*, 366 F.3d 1311, 1321 (Fed. Cir. 2004) (“Claims are to be construed from the vantage point of a person skilled in the relevant art. To the extent that this artisan would understand a claim term to have the same meaning in the art as that term has in common, lay usage, a general-usage dictionary can be a helpful aid to claim construction. But where evidence -- such as expert testimony credited by the factfinder, or technical dictionaries -- demonstrates that artisans would attach a special meaning to a claim term, or, as here, would attach no meaning at all to that claim term (independent of the specification), general-usage dictionaries are rendered irrelevant with respect to that term; a general-usage dictionary cannot overcome credible art-specific evidence of the meaning or lack of meaning of a claim term.”).

In emphasizing a focus on the actual claim terms, the Federal Circuit has noted that there is a “heavy presumption” in favor of the customary meaning of claim language as understood by one of ordinary skill in the art. *Johnson Worldwide Assocs., Inc. v. Zebco Corp.*, 175 F.3d 985, 989 (Fed. Cir. 1999). In *Johnson Worldwide*, the Federal Circuit explained that “[i]n order to overcome [the] heavy presumption in favor of the customary meaning of claim language, it is clear that ‘a party wishing to use statements in the written description to confine or otherwise affect a patent’s scope must, at the very least, point to a term or terms in the claim with which to draw in those statements,’ ” that is, “claim terms cannot be narrowed by reference to the written description or prosecution history unless the language of the claims invites reference to those sources.” 175 F.3d at 990. Additionally, of course, a patentee may expressly disclaim subject matter, or may describe a particular embodiment as being important to the invention, or may use a term that simply requires reference to the specification or prosecution history to determine the scope of the claim. In *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366-67 (Fed. Cir. 2002), the Federal Circuit further explained that such a presumption may be overcome: (1) where the patentee has chosen to be his own lexicographer, (2) if the intrinsic evidence indicates that the patentee expressly disclaimed subject matter or described a particular embodiment as being important to the invention, or (3) where a claim term deprives the claim of clarity such that there is no means by which the scope of the claim may be ascertained from the language used. *See also E-Pass*, 343 F.3d at 1368-69.

Accordingly, the Federal Circuit has cautioned that “[t]he written description must be examined in every case, because it is relevant not only to aid in the claim construction analysis, but also to determine if the presumption of ordinary and customary meaning is rebutted.” *Brookhill-Wilk*, 334 F.3d at 1298. “The written description is considered, in particular to determine if the patentee acted as his own lexicographer, as our law permits, and ascribed a certain meaning to those claim terms.” *Digital Biometrics*, 149 F.3d at 1344. In that sense, the specification functions more or less as a dictionary “when it expressly defines terms used in the claims or when it defines terms by implication.” *Vitronics*, 90 F.3d at 1582. The Federal Circuit has further noted that “the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.” *Id.* Claims, for that reason, are construed in light of the specification. See *ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 540 (Fed. Cir. 1999).

On the other hand, the Federal Circuit has observed that if the meaning of a particular claim term is asserted as something other than the customary meaning, the intrinsic evidence must “clearly set forth” or “clearly redefine” a claim term so as to put one skilled in the art on notice that the patentee intended to so redefine the claim term. *Elekta Instr. v. O.U.R. Scientific Int'l*, 214 F.3d 1302, 1307 (Fed. Cir. 2000); *N. Telecom v. Samsung*, 215 F.3d 1281, 1287 (Fed. Cir. 2000). That is to say, the court has explained that the specification must “express [an] intent to impart a novel meaning” to the claim term. *Schering v. Amgen*, 222 F.3d 1347, 1353 (Fed. Cir. 2000); *Optical Disc Corp. v. Del Mar Avionics*, 208 F.3d 1324, 1334 (Fed. Cir. 2000). But, the court has also noted that a claim term may be clearly redefined without an express statement of redefinition. For example, the court has held that the written description of the preferred embodiments “can provide guidance as to the meaning of the claims, thereby dictating the manner in which the claims are to be construed, even if the guidance is not provided in explicit definitional format.” *Scimed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1344 (Fed. Cir. 2001). In other words, the specification may define claim terms “by implication” such that the meaning may be “found in or ascertained by a reading of the patent documents.” *Bell Atlantic*, 262 F.3d at 1268, quoting *Vitronics*, 90 F.3d at 1582, 1584 n.6.

The court, in construing disputed terms and phrases may, and perhaps must, consider other unasserted claims as well. *Vitronics*, 90 F.3d at 1582. “The fact that we must look to other claims using the same term when interpreting a term in an asserted claim mandates that the term be inter-

preted consistently in all claims,” *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1579 (Fed. Cir. 1995), *cert. denied*, 516 U.S. 987 (1995), unless “the language of the written description is sufficient to put a reader on notice of the different uses of a term, and where those uses are further apparent from publicly-available documents referenced in the patent file.” In such a case “it is appropriate to depart from the normal rule of construing seemingly identical terms in the same manner.” *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1311 (Fed. Cir. 1999). Dependent claims may aid in interpreting the scope of the claims from which they depend, *Laitram Corp. v. NEC Corp.*, 62 F.3d 1388, 1392 (Fed. Cir. 1995), because the court should “not interpret an independent claim in a way that is inconsistent with a claim which depends from it.” *Wright Med. Tech., Inc. v. Osteonics Corp.*, 122 F.3d 1440, 1445 (Fed. Cir. 1997). Lastly, a court must give meaning to all of the words in a claim, *Ethicon Endo-Surgery, Inc. v. United States Surgical Corp.*, 93 F.3d 1572, 1577 (Fed. Cir. 1996), and is not free to read any limitations out of a claim. *Exxon Chem. Patents*, 64 F.3d at 1555.

B. Construction In Light of the Specification

Although the specification may and should be used to guide the meaning of the claims, courts must also guard against improperly reading limitations from the specification into the claims, as discussed above. The familiar claim construction canons are: “(a) one may not read a limitation into a claim from the written description, but (b) one may look to the written description to define a term already in a claim limitation, for a claim must be read in view of the specification of which it is a part. These two rules lay out the general relationship between the claims and the written description. * * * As rules at the core of claim construction methodology, they provide guideposts for a spectrum of claim construction problems.” *Renishaw*, 158 F.3d at 1248. The Federal Circuit has recognized, though, “that there is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into a claim from the specification.” *Comark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998); *Liebel-Flarsheim*, 358 F.3d at 904. That balance, the Federal Circuit has said, may turn on how the specification characterizes the claimed invention. *SunRace Roots Enter. Co. v. SRAM Corp.*, 336 F.3d 1298, 1305 (Fed. Cir. 2003). In that respect, as noted above, the Federal Circuit has said that one must “look[] to whether the specification refers to a limitation only as a part of less than all possible embodiments or whether the specification read as a whole suggests that the very character of the invention requires the limitation be a part of every

embodiment.” *Alloc*, 342 F.3d at 1370. Nevertheless, the Federal Circuit has made clear that “[i]t is improper for a court to add ‘extraneous’ limitations to a claim, that is, limitations added wholly apart from any need to interpret what the patentee meant by particular words or phrases in the claim.” *Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948, 950 (Fed. Cir. 1993). See also *Giaxco Wellcome, Inc. v. Andrx Pharms., Inc.*, 344 F.3d 1226, 1233 (Fed. Cir. 2003) (“When a claim term has an accepted scientific meaning, that meaning is generally not subject to restriction to the specific examples in the specification.”). That is, “[t]he written description *** is not a substitute for, nor can it be used to rewrite, the chosen claim language.” *SuperGuide Corp. v. DirectTV Enters., Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004). If the court does not need to rely on a limitation to interpret what a patentee meant by a particular term or phrase in a claim, “that limitation is ‘extraneous’ and cannot constrain the claim.” *Renishaw*, 158 F.3d at 1249.

The Federal Circuit has also cautioned that a “preferred embodiment” disclosed in a specification “is just that, and the scope of a patentee’s claims is not necessarily or automatically limited to the preferred embodiment.” *Ambil Enters. Ltd. v. Wawa, Inc.*, 81 F.3d 1554, 1559 (Fed. Cir. 1996). On the other hand, in some instances, the written description requirement of 35 U.S.C. § 112(1) warrants a claim construction that encompasses only the disclosed embodiment. See *Lairam Corp. v. Morehouse Indus.*, 143 F.3d 1456, 1463; *N. Am. Vaccine, Inc. v. Am. Cyanamid Co.*, 7 F.3d 1571, 1576-77 (Fed. Cir. 1993). “Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. *** The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.” *Renishaw*, 158 F.3d at 1250.

C. Prosecution History

In similar fashion, “[t]he prosecution history is relevant because it may contain contemporaneous exchanges between the patent applicant and the PTO about what the claims mean.” *Digital Biometrics*, 149 F.3d at 1344. The prosecution history is the record of the proceedings in the PTO that involved the examination and ultimate issuance of the subject patent. “[A]rguments made during prosecution shed light on what the applicant meant by its various terms,” *Morehouse Industries*, 143

F.3d at 1462 (Fed. Cir. 1998); *see also Vitronics*, 90 F.3d at 1582, “whether relied on by the examiner or not.” *Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004). Thus, the trial court may be required to examine the prosecution history, when it is of record, to determine whether the patentee has explained what was meant by language used in a claim or has “disclaimed” a potential claim construction in an amendment to the claim or in an argument. *Southwall*, 54 F.3d at 1576; *Interactive Gift*, 256 F.3d at 1331. Among other things, the “doctrine of prosecution disclaimer” precludes patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution. *See Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1324 (Fed. Cir. 2003).

D. Extrinsic Evidence

The Federal Circuit has explained that “[i]n most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence.” *Vitronics*, 90 F.3d at 1583. However, the court has also recognized that “the testimony of one skilled in the art about the meaning of claim terms at the time of the invention will almost always qualify as relevant evidence.” *Eastman Kodak Co. v. Goodyear Tire & Rubber Co.*, 114 F.3d 1547, 1555 (Fed. Cir. 1997). Thus, a court may admit and accept testimony by the parties’ expert witnesses as background in the technical area at issue, *Mantech Envtl. Corp. v. Hudson Envtl. Sys., Inc.*, 152 F.3d 1368, 1372-1373 (Fed. Cir. 1998), and “it is entirely appropriate, perhaps even preferable, for a court to consult trustworthy extrinsic evidence to ensure that the claim construction it is tending to from the patent file is not inconsistent with clearly expressed, plainly apposite, and widely held understandings in the pertinent technical field.” *Pitney Bowes*, 182 F.3d at 1309. “But testimony on the technology is far different from other expert testimony, whether it be of an attorney, a technical expert, or the inventor, on the proper construction of a disputed claim term ***. The latter kind of testimony may only be relied upon if the patent documents, taken as a whole, are insufficient to enable the court to construe disputed claim terms.” *Id.* at 1308-1309. Thus, extrinsic evidence may be used by the court to assist in the proper understanding of a disputed limitation. But, such evidence may not be used to vary, contradict, expand, or limit the claim language from how it is defined in the specification or file history. *Vitronics*, 90 F.3d at 1584-85.

The following report and recommendation concerning the claim terms in dispute are made with the foregoing principles and guidelines in mind.

IV. Harvey I

A. Disclosure

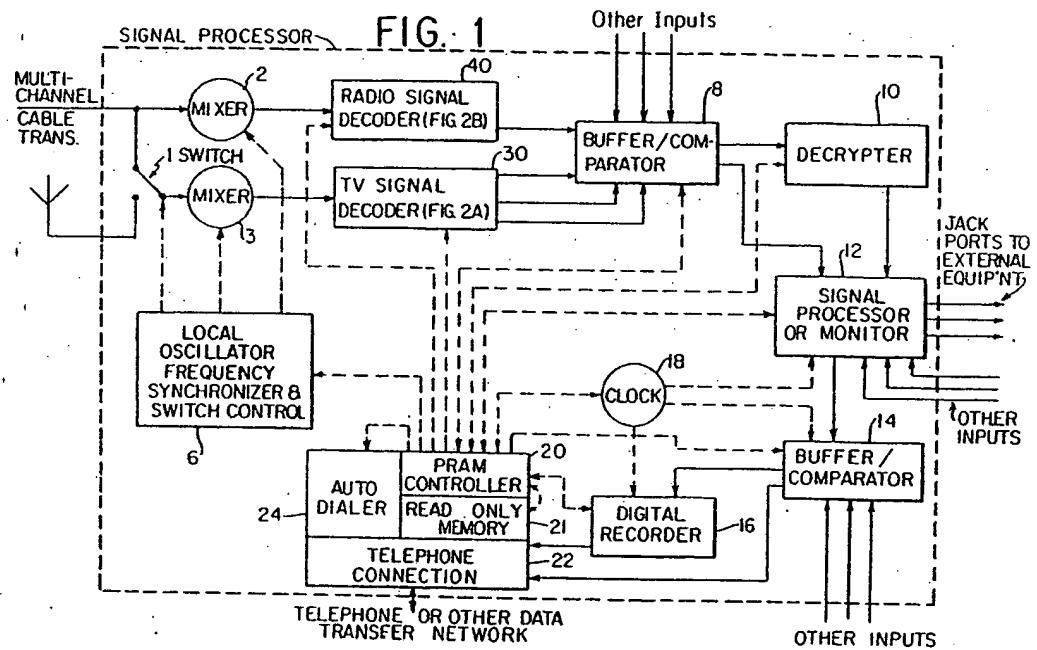
Harvey I, entitled "Signal Processing Apparatus and Methods," issued on September 15, 1987, from an application filed on November 3, 1981. The patentees, Harvey *et al.*, explain that two "simultaneous, independent trends," namely, (1) "development and growth of the so-called cable television industry whose member companies deliver locally not one but many channels of program[m]ing" and (2) "widespread and growing ownership of computers, especially microcomputers in homes," have potential for increasing "the scope and scale of multi-media and multi-channel presentations" to "increase variety and add substantially to the richness of presentations as regards both entertainment and the communications of ideas and information." Accordingly, one stated object of the invention was "to unlock this potential by the development of means and methods which permit program[m]ing to communicate with equipment that is external to television and radio receivers, particularly computers and computer peripherals such as printers." Harvey I, col. 1, lines 23-41.

Harvey *et al.* describe a number of "methods and apparatus with several forms." One method "provides a technique whereby a broadcast or cablecast transmission facility can duplicate the operation of a television studio automatically through the use of instruction and information signals embedded in program[m]ing either supplied from a remote source or sources or prerecorded." Another method is used "at receiver sites such as private homes or public places like theaters, hotels, brokerage offices" and "provides techniques whereby, automatically, single channel, single medium presentations, be they television, radio, or other electronic transmissions, may be recorded, coordinated in time with other programming previously transmitted and recorded, or processed in other fashions." For example, "[m]ultimedia presentations may be coordinated in time and/or in place as, [again] for example, when real-time video programming is coordinated with pres-

entations from a microcomputer working with data supplied earlier." *Id.* at col. 3, line 30 to col. 4, line 4.

The methods disclosed by Harvey *et al.* "employ signals embedded in programs" that (1) "cannot become separated inadvert[er]ntly from the program[m]ing and, thereby, inhibit automatic processing," (2) "can convey signals to equipment that must switch manners or modes of operation during transmissions of individual units of program[m]ing," and (3) "can be monitored." Harvey *et al.* explain that the embedded signals "may run and repeat continuously throughout the program[m]ing or they may run only occasionally or only once. They may appear in various and varying locations. In television they may appear on one line in the video portion of the transmission, or on a portion of one line, or on more than one line, and will probably lie outside the range of the television picture displayed on a normally tuned television set. In television and radio they may appear in a portion of the audio range that is not normally rendered in a form audible to the human ear. In television audio, they are likely to lie between eight and fifteen kilohertz. Signals may also be transmitted on frequencies outside the ranges of television and radio. Different and differing numbers of signals may be sent in different and differing word lengths and locations." According to Harvey *et al.*, the signals may be encrypted and monitored for unauthorized use. *Id.* at col. 4, lines 5-54.

Structurally, Harvey *et al.* disclose a "signal processor apparatus for simultaneous use with a cablecast input that conveys both television and radio program[m]ing and a broadcast television input," as shown in Fig. 1.



Harvey *et al.* explain that "the input signals are the entire range of frequencies or channels transmitted on the cable and the entire range of broadcast television transmissions available to a local television antenna of conventional design." In Fig. 1, a cable transmission is input simultaneously to switch 1 and mixer 2, and a broadcast transmission is input to switch 1. Switch 1 and mixers 2 and 3 are controlled by local oscillator and switch control 6. According to Harvey *et al.*, that oscillator is "controlled to provide a number of discrete specified frequencies for the particular radio and television channels required," and switch 1 "acts to select the broadcast input or the cablecast input and passes transmissions to mixer 3 which, with the controlled oscillator, 6, acts to select a television frequency of interest that is passed at a fixed frequency to a TV signal decoder, 30." Harvey *et al.* point out that in Fig. 1, "one sees that the three separate lines of information outputted from TV signal decoder, 30, are then gated to a buffer/comparator, 8, which also receives other inputs from the other separate receivers comprising similar filters, demodulators, and decoders for other chan-

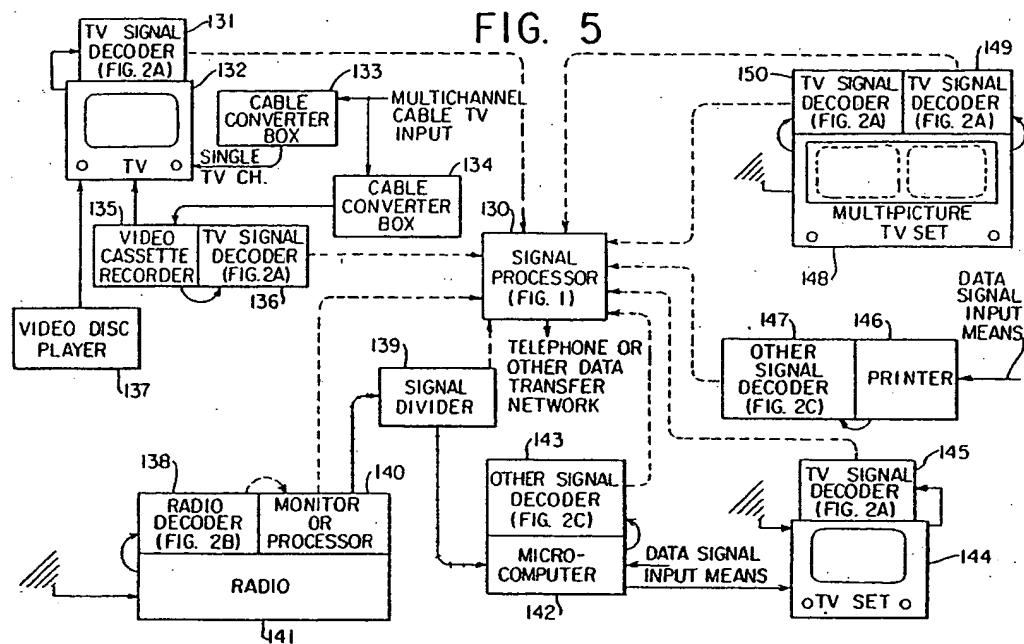
nels of interest." One such other path, Harvey *et al.* explain, is that from mixer 2. According to Harvey *et al.*, "[m]ixer 2 and the controlled oscillator, 6, act to select a radio frequency of interest which is inputted to a radio signal decoder, 40 * * *. The frequency passes first through standard radio receiver circuitry, 41, * * *, a radio decoder, 42, and a standard digital detector, 43. * * * [T]he radio signal detector outputs to buffer/comparator 8." *Id.* at col. 6, line 23 to col. 7, line 21..

Harvey *et al.* explain that buffer/comparator 8 "organizes the data stream that it receives according to a pre-determined fashion that enables [it] * * * to assemble signal units from signal words." The buffer/comparator also "identifies signal words and/or signal units that must be decrypted, either in whole or in part, and passes identified signal words and/or units to decrypter, 10," which "uses conventional decrypter techniques" to decrypt the signals before passing them to "processor or monitor, 12." The processor or monitor 12 "analyzes, in a predetermined fashion, the signal words and units that it receives and determines whether they are to be passed to external equipment or to buffer/comparator, 14, for further processing or both." If a signal is to be passed externally, then "processor unit, 12, identifies, in a pre-determined fashion, the external equipment to which the signal or signals are addressed and passes them to appropriate jack ports for external transmission," but if the signals need further processing, "processor or monitor, 12, passes them to buffer/comparator, 14." *Id.* at col. 7, lines 36-65.

According to Harvey *et al.*, buffer/comparator 14 "has means for identifying, according to a predetermined fashion, which signals are to be recorded," and can count and discard duplicate signals to "avoid overloading digital recorder, 16." Furthermore, Harvey *et al.* explain, the buffer/comparator 14 is "connected to clock, 18" to add information such as time of receipt to the signals. "Upon determining in a pre-determined fashion that a signal word or unit should be passed, buffer/comparator, 14, transmits the combined information to a digital recorder, 16. Buffer/comparator, 14, also has means for determining, in a predetermined fashion, when signals require transfer immediately to a remote site and for communicating such a requirement to controller, 20, and such signals directly with the remote site via telephone connection, 22." *Id.* at col. 7, line 65 to col. 8, line 12.

According to Harvey *et al.*, the signal processor has a controller that governs the operation of all operating elements of the apparatus and includes "program[m]able random access memory controller 20, read only memory 21 that may contain a unique digital code capable of identifying the signal processing apparatus uniquely, an automatic dialing device 24, and a telephone unit, 22." The controller 20 "inputs [to] the local oscillator, 6, a sequential pattern to select the various channels to be received by switch, 1, and mixers, 2 and 3," which "allows the channels to be diverted to the detectors, receivers, and decoders in any predetermined pattern desired." Harvey *et al.* explain that "[t]he controller, 20, can instruct signal decoders, 30 and 40, when, where, and how to look for signal words, which allows signal words to be received in any pattern or patterns. It can instruct buffer/comparator, 8, how to assemble signal words into signal units and join units together for further transfer and how to determine which signals to pass to decrypter, 10. It can tell decrypter, 10, when and how to change decryption patterns, fashions, and techniques. It can tell processor or monitor, 12, how to determine which signals to pass externally and when and where and how to determine which signals to pass to buffer/comparator, 14. It can tell buffer/comparator, 14, what and how to count, what and how to mark signals, and what received signals to discard. The controller, 20, also inputs the digital recorder, 16, to direct it to output the information from the memory of the recorder, 16, to telephone connection, 22, and thence to the collection site at the remote geographical location. The controller, 20, also controls the automatic telephone dialing device, 24, to allow the apparatus to automatically output its own information in accordance with a predetermined sequence and to change telephone numbers dialed as required." *Id.* at col. 8, lines 20-55.

Harvey *et al.* explain that Fig. 5 illustrates "methods for monitoring reception and operation which [] can be used to gather statistics on program[m]ing usage and associated uses of other data transmissions and equipment."

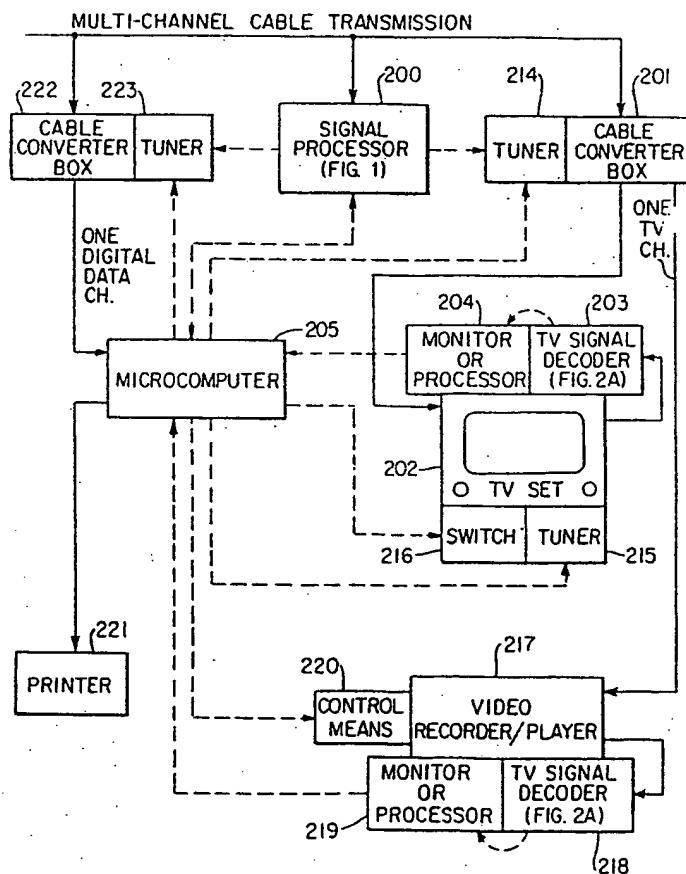


In particular, Fig. 5, according to Harvey *et al.*, "shows two conventional TV sets, 132 and 144, a conventional video cassette recorder, 135, a conventional videodisc player, 137, a conventional radio, 141, a conventional microcomputer, 142, a conventional data printer, 146, and a television set, 148, that is capable of displaying two different television program[m]ing transmissions at once." According to Harvey I, "[o]ne particular advantage of these methods for monitoring program[m]ing is that, by locating the identifier signals in the audio and/or video and/or other parts of the program[m]ing that are conventionally recorded by, for example, conventional video cassette recorders, these methods provide techniques for gathering statistics on what is recorded on video cassette recorders and on how people replay such recordings. For example, a person might instruct video cassette recorder, 135, automatically to record the NBC Network Nightly News as broadcast over station WNBC in New York City. Recorder, 135, might receive the program[m]ing over Manhattan Cable TV channel 4 and record the program[m]ing from 7:00 PM to 7:30 PM on the evening of July 15, 1985. Each discrete bit of this information could be conveyed to recorder, 135, in a signal unit

or units in the program[m]ing so received and recorded. Decoder, 136, would identify these signals and transfer them to signal processor, 130. Subsequently, the person might play the recorded program[m]ing on TV set, 132, from 10:45 PM to 11:15 PM the same evening. This time, TV signal decoder, 131, identifies the embedded signals and transfers them to signal processor, 131. Prerecorded video cassettes and videodiscs could also contain unique embedded codes that would identify their usage (and could also transfer instructions to other external equipment)." *Id.* at col. 15, lines 27-41, and col. 16, lines 25-50.

Harvey *et al.* also describe the invention in the context of several examples. In one example, with reference to Fig. 6C, "microprocessor, 205, is program[m]ed to hold a portfolio of stocks and to receive news about these particular stocks and about the industries they are in."

FIG. 6C



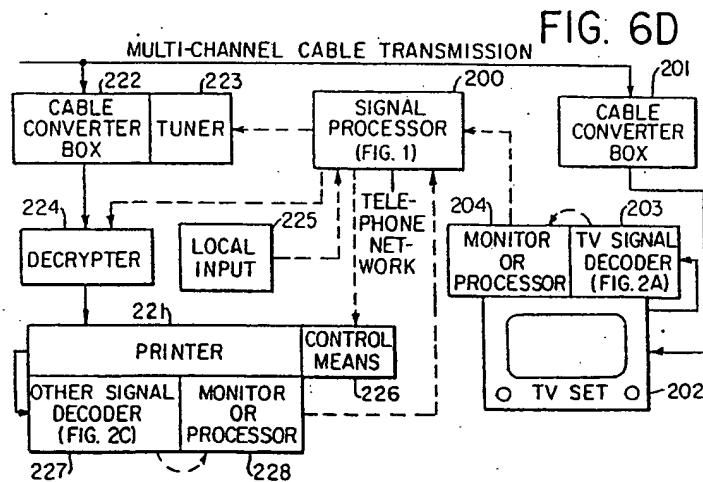
According to Harvey *et al.*, “[s]everal separate news services transmit news on different channels carried on the multi-channel cable transmission to converter boxes, 222 and 201, and to signal processor, 200. The news services precede [sic] each news transmission with a unique signal that uniquely identifies the company or companies to which the news item refers and/or the industries. In a predetermined fashion, microcomputer, 205, instructs signal processor, 200, to hold examples of the sought-for unique signals in its buffer/comparator, 8, and compare them with all incoming signals. Signal processor, 200, scans sequentially all channels. When it identifies a signal of interest, it relays that information and the channel identifier, in this illustration, to microcomputer, 205. In a predetermined fashion, either microcomputer, 205, or signal processor, 200, instructs tuner, 223, to set cable converter box, 222, to the proper channel, and microcomputer, 200, may record the information in memory or transfer it to printer, 221, for printing.” *Id.* at col. 18, lines 44-68.

In another example, “microcomputer, 205 may be preinformed that a certain television program, hypothetically ‘Wall Street Week,’ should be televised on TV set, 202, when it is cablecast.” If the microcomputer 205 receives no program identification signals whatever from TV signal decoder 203 at the program time (indicating that the TV set is not on), it “instructs signal processor, 200, to pass all program and channel identifiers on all program[m]ing being cablecast on the multi-channel system.” The signal processor receives that instruction and “reacts, in a predetermined fashion by passing also externally to microcomputer, 205, all signals that it passes to buffer/comparator, 14.” The microcomputer analyzes these identifier signals in a predetermined fashion, and “determines that ‘Wall Street Week’ is being televised on channel X.” “Then, in a predetermined fashion, microcomputer, 205, may instruct tuner, 214, to switch box, 201, to channel X and may instruct control system, 220, to turn video recorder, 217, on and record ‘Wall Street Week,’ and also microcomputer, 205, may instruct switch, 216, to turn TV set, 202, on and tuner, 215, to tune appropriately to ‘Wall Street Week.’” *Id.* at col. 19, lines 5-29.

In yet another example, the microcomputer 205 “is preprogram[m]ed to respond in a predetermined fashion to instruction signals embedded in the ‘Wall Street Week’ program[m]ing transmission. When the ‘Wall Street Week’ transmission begins at 8:30 PM on a Friday evening, several instruction signals are identified by decoder, 203, and transferred to microcomputer, 205. These signals instruct microcomputer, 205, to generate several graphic video overlays, which microcomputer,

205, has the means to generate and transmit and TV set, 202, has the means to receive and display, and to transmit these overlays to TV set, 202, upon command. Subsequently in the program, the host says, 'Here is what the Dow Jones Industrials did [in] the past week,' and a studio generated graphic is pictured. The host then says, 'Here is what the broader NASDAQ index did in the week past,' and a studio generated graphic overlay is displayed on top of the first graphic. Then the host says, 'And here is what your portfolio did,' [at which point] an instruction signal is generated in the television studio originating the program[m]ing and is transmitted in the program[m]ing transmission." That signal is identified by decoder 203, transferred via processor 204 to microcomputer 205, and "instructs microcomputer, 205, to transmit the first overlay to TV set, 202, for as long as it receives the same instruction signal from processor, 204." The result, Harvey *et al.* explain, is that the viewer sees a microcomputer generated graphic of his own stocks' performance overlay the studio generated graphic. *Id.* at col. 19, line 42 to col. 20, line 2.

According to Harvey *et al.*, Fig. 6D "illustrates one method for co-ordinating the presentation of information through the use of print with video," as well as "possible uses of a decrypter and a local input."

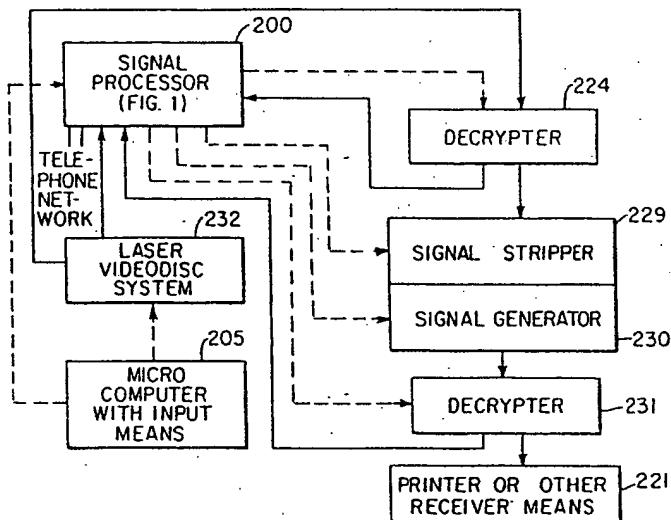


Harvey *et al.* also provide an example: "Suppose a viewer watches a television program on cooking techniques that is received on TV set, 202, via box, 201 [such as] Julia Child's 'The French Chef.'" "Halfway through the program, the host says, 'If you are interested in cooking what we are prepar-

ing here and want a printed copy of the recipe for a charge of only 10 cents, press 567 on your Widget Signal Generator and Local Input.' The viewer then presses buttons 567 on local input, 225, which signal is conveyed to the buffer/comparator, 8 (referring to Fig. 1), of signal processor, 200, to hold and process further in a predetermined fashion. Five minutes later, a signal is identified in the incoming program[m]ing on TV set, 202, by decoder, 203, which is also transferred by processor, 204, to buffer/comparator, 8, of signal processor, 200. This signal instructs buffer/comparator, 8, that, if 567 has been received from signal generator, 225, signal processor, 200, should, in a predetermined fashion, instruct tuner, 223, to tune cable converter box, 222, to the appropriate channel to receive the recipe in encoded digital form and instruct control means, 226, to activate printer, 221. The signal transmission from processor, 204, also passes a signal word to signal processor, 200, which, in a predetermined fashion, signal processor, 200; decrypts and transfers to decrypter, 224, to serve as the code upon which decrypter, 224, will decrypt the incoming encrypted recipe. Then, as part of the predetermined operation, signal processor, 200, conveys to its data recorder, 16, information that the 567 order was placed by the viewer and all necessary equipment was enabled. When the transmission of the recipe is received, box 222, transfers the transmission to decrypter, 224, for decryption and thence to printer, 221, for printing. Other signal decoder, 227, identifies a signal in the transmission received by printer, 221, which it passes via processor, 228, and buffer/comparator, 14, of signal processor, 200, to data recorder, 16. This signal indicates that the recipe, itself, has been received. Subsequently, when signal processor, 200, transfers the data in its data recorder, 16, via telephone to a remote site, that site can determine for billing purposes that the recipe was, first, ordered and, second, delivered." *Id.* at col. 20, lines 13-59.

A further example is illustrated in Fig. 6E, which is said to depict "a signaling and decryption technique which could serve to facilitate the electronic distribution of copyrighted materials such as books and movies by tending to discourage piracy and the unauthorized retransmission of copies, whether they be properly acquired or pirated."

FIG. 6E



For example, a publisher puts his full line of books on laser discs in encrypted form and distributes one copy of each disc to a bookstore. Suppose a customer comes into the book store and asks to buy a title, e.g., *How to Grow Grass*. The salesman asks the customer for suitable identification, types into microcomputer, 205, the customer's name and address and that he wishes to purchase *How to Grow Grass*. Harvey *et al.* explain that microcomputer 205 "may check to determine that the customer has no record as a pirate then transfers his name and address to buffer/comparator, 8 *** of signal processor, 200, and instructs laser videodisc system, 232, to transmit its encrypted copy of *How to Grow Grass* to printer or other means, 221, via decryptors, 224 and 231. Laser system, 232, transmits one copy of the encrypted title to decryptor, 224, and one to signal processor, 200, for processing and evaluation. In the encrypted title, signal processor, 200, identifies one or more signal words. If signal processor, 200, has the customer's name and address and the bookstore is a retail outlet in good standing that has received from a remote site program information on the predetermined fashion in affect, signal processor, 200, decrypts the signal word or words and transfers them

to decryptor, 224, to serve as the code for the first stage of decryption. Decryptor, 224, then decrypts a part of the encrypted transmission and passes the partly decrypted transmission to signal stripper, 229, and signal generator, 230. In the decrypted portion of the partially decrypted transmission, signal processor, 200, identifies a second signal word or set of words which it decrypts in a predetermined fashion and passes to decryptor, 231, to serve as the code basis for the second stage of decryption. Signal processor, 200, also may instruct signal stripper, 229, to remove this second signal word or words. Signal processor, 200, also passes the customer's name and address and its own unique apparatus identifier code from read only memory, 21, to signal generator, 230, which generates a signal embedding the customer's name and address and the retail outlet's identification in the program[m]ing in a suitable place or places in a suitable fashion. * * * * The transmission then passes through decryptor, 231, which completes the decryption process and passes the decrypted program[m]ing transmission to printer or other means, 221, and also to signal processor, 200. Signal processor 200, receives and analyzes the signal content of the program[m]ing output of decrypter, 231 to ensure that stripper, 229, and * * * generator, 230, have functioned properly. If they have not, signal processor, 200, shuts down the decryption of the title and prevents its delivery to the customer." *Id.* at col. 21, line 3 to col. 22, line 4.

B. Summary of the Substantive Prosecution History

1. Original Application – November 3, 1981

Harvey *et al.* filed their original application on November 3, 1981 with 17 claims, of which claims 1-4, 9 and 12 were independent. *See Plaintiffs' Opening Markman Brief, Apx. F (Vol. 3 of 7) at PID01930,-01937-81.* Those independent claims are reproduced below for reference:

1. In a signal processor, a carrier transmission receiving means; a means for demodulating said carrier transmission to detect an information transmission thereon; a detector means for determining the presence or absence of an embedded signal in the information transmission within a pre-determined time interval and for detecting said signal; a recorder means for receiving and recording the presence or absence of said detected signal; a control means for instructing said receiving means to receive the appropriate carrier transmission within said pre-determined time interval; and a control means for instructing said recorder to direct information recorded thereon to a remote site.

2. In a signal processor, a carrier transmission receiving means; a means for demodulating said carrier transmission to detect an information transmission thereon; a detector means for determining the presence or absence of an embedded signal in the information transmission within a pre-determined time interval and for detecting said signal; a recorder means for receiving and recording the presence or absence of said detected signal; a control means for instructing said detector means to detect the presence or absence of said embedded signal within said predetermined time interval; and a control means for instructing said recorder to direct information recorded thereon to a remote site.
3. In a signal processor, at least one carrier transmission receiving means; at least one means for demodulating said carrier transmission to detect an information transmission thereon; at least one detector means for determining the presence or absence of an embedded signal in the information transmission within a pre-determined time interval and for detecting said signal; a buffer means for organizing said detected signals with detected signals from other detector means into a data stream; a recorder means for receiving and recording said stream; a control means for instructing said receiving means to receive the appropriate carrier transmission within said predetermined time interval; and a control means for instructing said recorder to direct information recorded thereon to a remote site.
4. In a signal processor, at least one carrier transmission receiving means; at least one means for demodulating said carrier transmission to detect an information transmission thereon; at least one detector means for determining the presence or absence of an embedded signal in the information transmission within a pre-determined time interval and for detecting said signal; a buffer means for organizing said detected signals with detected signals from other detector means into a data stream; a recorder means for receiving and recording said stream; a control means for instructing said detector means to detect the presence or absence of said embedded signal within said predetermined time interval; and a control means for instructing said recorder to direct information recorded thereon to a remote site.
9. A signal processor comprising a carrier transmission receiving means; a means for demodulating to detect an information transmission thereon; a detector means for identifying a signal embedded in the information transmission; a first control means for instructing said detector to identify and pass said embedded signal; and a second control means for receiving said embedded signal passed on instruction from said first control means and for conveying any instruction or information contained in said embedded signal.

12. A method of processing signals including:

- (a) the step of receiving a carrier transmission;

- (b) the step of demodulating said carrier transmission to detect an information transmission thereon;
- (c) the step of detecting and identifying an embedded signal on said information transmission;
- (d) the step of passing said embedded signal to a device to be controlled based on an instruction identified within said embedded signal; and
- (e) the step of controlling said device based on an instruction within said embedded signal.

* * *

2. First Office Action – July 25, 1983

In a first office action, the examiner rejected all 17 claims under 35 U.S.C. § 103 as unpatentable over U.S. Patent No. 3,845,391 to Crosby (“Crosby”)⁵ in view of U.S. Patent No. 4,381,522 to Lambert (“Lambert”).⁶ See generally Plaintiffs’ Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02006-08. The examiner’s reasoning was brief:

Crosby discloses a recorder being controlled [sic] by an embedded signal (See Fig. 1A) which is coded into the data transmitted. Lambert shows that a recorded [sic] can be controlled to transmit to a remote location (See Fig. 1). It is deemed obvious that the recorder of Crosby can be so controlled.

The balance of the art is cited to show control signal manipulation of remote devices.

⁵ Crosby, entitled “Communication Including Submerged Identification Signal,” explains in the abstract:

A technique for identifying a program with an identification code in which the code is modulated onto an audio frequency subcarrier and transmitted with the program. A short time period, narrow band width window is cut out of the program material to accommodate the code carrying modulated audio subcarrier. The amount by which the code modulates the subcarrier is made to track with the audio envelope of the program and thus minimizes the listener’s ability to hear the code. The receiver equipment automatically responds to the presence of the subcarrier and detects the code. Unmodulated subcarrier is transmitted immediately prior to the code modulation to assure that there is no ambiguity between the code signal and program material. Automatic frequency control responsive to the unmodulated subcarrier compensates for tape or disc recorder speed variation. The automatic frequency control is disabled during the actual code transmission to prevent a receiver response that might wipe out the code signal.

⁶ Lambert, entitled “Selective Viewing,” explains in the abstract:

A cable television system includes a minicomputer that responds to signals from viewers desiring to see particular television program material to provide a schedule video signal that is broadcast over a program schedule channel carrying a video signal representative of television programs to be broadcast, the time of broadcast and the channel where broadcast. The computer also provides selecting control signals that causes a particular television signal source, such as on a video tape cassette, disc or film, to provide a video signal that is coupled by a video switch controlled by switching control signals from the computer for modulating a television transmitter associated with a channel selected for broadcasting the selected television program material. A television signal combiner combines the signals from the different television transmitters for broadcast over a cable to the remote receiving locations. A viewer at a remote receiving location may select a particular television program for viewing by dialing a telephone number to connect the telephone at the remote receiver location by the telephone system to the minicomputer and then dial a number corresponding to the desired program on a schedule made available to each person at the remote receiving locations.

Id. at PID02006-07. The "balance of the art" cited was U.S. Patent Nos. 3,833,757 to Kirk, Jr. *et al.* ("Kirk Jr."),⁷ 3,987,398 to Fung ("Fung"),⁸ and 3,684,823 to McVoy ("McVoy").⁹ See *id.* at PID02008.

3. First Amendment – February 7, 1984

a) To the Claims

In response, Harvey *et al.* cancelled claims 1-17 and added new application claims 18-30, of which claims 18, 21, 24 and 26 were independent. Those new independent claims are reproduced below for reference:

18. A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the

⁷ Kirk Jr., entitled "Electronic Bilateral Communication System For Commercial And Supplementary Video And Digital Signaling," explains in the abstract (paragraphing in original):

A bilateral cable communications system - as for a lodging facility, distributes commercial and supplementary video programs from common equipment to spaced subscriber station locate, for example, in each hotel-motel room. Heterodyne converter apparatus is included at each station for viewing the supplementary programming on a standard television receiver.

Time division multiplexed, full duplex digital communications are also effected via the distribution cable for providing signaling between the common equipment and the subscriber locations. The digital signaling implements administrative and supervisory control for supplementary video reception and monitoring - as for extra fee accounting purposes, and also general lodging service tasks.

⁸ Fung, entitled "Remote Disconnect-Reconnect Tap For Cable Television Systems," explains in the abstract:

A remotely controlled disconnect-reconnect tap for a cable television system having a head end feeding a cable distribution system. The tap comprises means for receiving and detecting a plurality of pairs of tones modulated on a carrier and sent over the cable distribution system from the head end, means responsive to a predetermined sequence of said pairs of tones for developing a control signal, and switch means responsive to the control signal which turns off if already on or on if already off to thereby disconnect or reconnect, respectively, a subscriber to the cable distribution system.

⁹ McVoy, entitled "Television Communication System," explains in the abstract:

A cable television communications system has signal processing headend equipment that emits a low frequency control signal that modulates the audio carrier. The control signal is transmitted over the cable along with the video and audio information. The control signal actuates control circuitry in a receiver. In the absence of the control signal the receiver will be disabled by reason of a disabling signal being applied to a critical circuit of the receiver. When the control signal is received, however, the disabling signal is removed and the receiver operates normally. For subscription television programs, another low frequency audio control signal may be sent over the cable to actuate another control circuit and jam a channel with another disabling signal. The second disabling signal may be manually switched out by a subscriber who at the same time activates a timing device to record the subscription viewing time.

computers being adapted to transmit overlay signals to their associated television receivers and with at least some of said computers being programmed to process overlay modification signals so as to modify the overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a particular user application, comprising the steps of

transmitting a video signal containing a television program signal,

transmitting an instruct-to-overlay signal,

receiving said video signal at a plurality of receiver stations and displaying said program material on the video receivers of selected ones of said plurality of receiver stations,

detecting the presence of said instruct-to-overlay signal at said selected receiver stations and coupling said instruct-to-overlay signal to the computers associated with the video receivers of said selected stations, and

causing said last named computers to transmit their overlay signals to their associated television receivers, thereby to present a display at the selected receiver stations including the television program and the computer generated overlay.

21. In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to transmit overlay video signals to their associated television receivers and with at least some of said computers being programmed to process overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a particular user application, the steps of

transmitting a video signal containing a television program signal, and

transmitting an instruct-to-overlay signal selectively embedded in said television program signal to thereby cause selected ones of said computers to transmit their overlay signals to their associated television receiver to present a combined display consisting of the television program and the computer generated overlay.

24. In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to transmit overlay video signals to their associated television receivers and with at least some of said computers being programmed to process overlay modification signals so as to modify the overlay video signals transmitted to their associated receivers, each of said computers being programmed to accommodate a particular user application, and wherein a video sig-

nal containing a television program signal and an instruct-to-overlay signal are transmitted to said receiver stations, the steps of

receiving said video signal at a plurality of receiver stations and displaying said program material on the video receivers of selected ones of said plurality of receiver stations,

detecting the presence of said instruct-to-overlay signal at said selected receiver stations and coupling said instruct-to-overlay signal to the computers at said selected receiver stations, and

causing the computers at said selected receiver stations to transmit their overlay video signals to their associated television receivers, thereby to present a combined display at the selected receiver stations consisting of the television program and the computer generated overlay.

26. Television signal processor means, comprising carrier transmission receiving means, means for demodulating the output of said receiving means to detect a video program signal, means normally coupling said video signal to a television receiver, decoder means for determining the presence or absence of an embedded instruct-to-overlay signal in said video signal, computer means for transmitting overlay signals, and means connected to said computer means and responsive to said decoder means when the presence of said embedded signal is detected for coupling said overlay signals to said television receiver.

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02011-14.

b) Applicants' Remarks

(1) Regarding the New Application Claims

Harvey *et al.* explained that their new claims were directed toward the "Wall Street Week" embodiment:

The claims originally filed have been cancelled and replaced with claims 18-30. These claims are directed to the embodiment of the invention shown in Fig. 6C and described specifically in the specification at page 38 et seq.¹⁰ As explained therein, this invention uses the signal decoder 203 of Fig. 2A (for example) for the purpose of providing graphic overlays upon receipt of selected signals broadcast by the transmitter (for example). The claimed subject matter calls for the use of computer means to generate overlay signals (video or audio) which are se-

¹⁰ That section of the application corresponds to col. 19, line 5 to col. 22, line 24 of Harvey I as issued.

lectively coupled to the user's television receiver upon detection of the instruct-to-overlay signal by means of the signal decoder 203 of Fig. 2A.

The specific example contained in the specification relates to a television program such as "Wall Street Week" wherein the invention might be used to display the subscriber's investment portfolio at selected times during the normal broadcast. The invention further provides for the possibility of continuously (or selectively) modifying the format or content of the overlay information stored in the microprocessor (or microcomputer) so that, for example, when the narrator causes the "embedded signal" to be broadcast, an updated record of the subscriber's portfolio is automatically displayed at the proper time during the program.

Id. at PID02015-16. Harvey *et al.* then explained in more detail what each of their new application claims were directed to:

Newly submitted claims 18-25 are method claims directed to a method of communicating television program material to a multiplicity of receiver stations. Claims 18 and 19 include both transmitting and receiving steps; claims 20 and 21 are directed to the transmitting steps; and claims 22 and 23 are directed to the receiving steps. Claims 24-28 are directed to a portion of the receiving apparatus.

The method claims 18-25 pertain to systems wherein video information including television program materials is transmitted to a multiplicity of receiver stations. Each of the receiver stations includes a television receiver and a computer, with the computer being capable of transmitting overlay video signals to its associated receiver. In addition, the computers can be programmed to modify the overlay video signals. The transmitter transmits a video signal which contains the television program material and an "instruct-to-overlay" signal which, as set forth in the various claims, causes the computer to transmit the overlay signals to the associated receivers "thereby to present a display consisting of the television program and the computer generated overlay."

The dependent claims (claims 19, 22 and 25) additionally call for the step of transmitting information to the computers to cause the overlay signals to be modified. In this way, for example, the format or content of the overlay signals relating to a user's investment portfolio may be modified so that the information from the computer displayed on the screen remains current and directly relevant to the appearance and content of the television program displayed. Dependent claims 20 and 23 state that the instruct-to-overlay signal is embedded in the vertical blanking interval of the video signal.

Claims 26-30 are directed to television signal processor means and include the apparatus at the receiver station which causes the computer to generate overlay

signals in response to the embedded "instruct-to-overlay signal" from the transmitter.

Id. at PID02016-17.

(2) Regarding Crosby, Lambert, McVoy, Fung and Kirk Jr.

Harvey *et al.* acknowledged that "[c]laims 1 through 17 had been rejected under 35 U.S.C. § 103 as being unpatentable over Crosby in view of Lambert." Harvey *et al.* urged, however, that "[c]learly, neither these nor the remaining cited references disclose or suggest the subject matter of claims 18-28." In particular, Harvey *et al.* argued with respect to Crosby and Lambert that:

Crosby does disclose the use of an "embedded signal" accompanying television broadcast program material, however, in Crosby, such information is used solely for the purpose of confirming that certain program material (typically advertising) has been received. There is no suggestion in Crosby that this embedded signal can be used for the purpose of coupling a stored overlay video signal (which may be continuously updated) to the receiver at selected moments in the course of the program.

Lambert was cited to show that a recorder can be controlled to transmit to a remote location. In Lambert, a minicomputer is responsive to signals from viewers to provide a video signal representative of the schedule of the television programs to be broadcast over a cable system. The viewer or subscriber is then able to select a particular television program for viewing by dialing a telephone number which controls the minicomputer. Here also, there is no suggestion that the minicomputer can be selectively controlled so as to insert overlay video signals into existing program materials.

Id. at PID02017-18.

As for the "remaining references," namely, McVoy, Fung and Kirk Jr., Harvey *et al.* contended that they were "not material."

Fung concerns a remotely controlled tap for a cable television system. McVoy uses an embedded signal in a subscription television system to connect the subscribers to the system. Kirk, Jr. *et al.* relate to a device for distributing commercial and supplementary video programs from common equipment to be spaced subscriber stations. There is no teaching that the "supplementary video programs" are to be selectively called up in the course of the commercial program based on control signals transmitted to the individual subscribers.

Id. at PID02018.

4. Second Office Action – April 18, 1984

In a second office action, the examiner rejected all of Harvey *et al.*'s new application claims 18-30 under § 103 as unpatentable over U.S. Patent No. 4,337,480 to Bourasson *et al.* ("Bourasson *et al.*")¹¹ in view of Crosby. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02024, - 02026. The examiner's reasoning was again brief:

Bourasson *et al.* (Figures 1 and 6) disclose a remotely actuated computer, i.e., microprocessor, controlled overlay system for a television display including a multitude of peripheral units. Crosby discloses the actuation of a device based on the use of a signal embedded in a television program. It is deemed obvious to substitute the remote actuation signal of Crosby for the equivalent signal of Bourasson *et al.*

The balance of the art is cited to show overlay control signals.

Id. at PID02024-25. The "balance of the art" cited was U.S. Patent Nos. 3,668,307 to Face *et al.*, 4,347,532 to Korver, and 4,218,698 to Bart *et al.* *See id.* at PID02026.

5. Second Amendment – October 9, 1984

a) To the Claims

In response, Harvey *et al.* amended their independent claims as follows (underlining and strikethroughs¹² show additions and deletions, respectively):

18. (Amended) A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to transmit overlay signals to their asso-

¹¹ Bourasson *et al.*, entitled "Dynamic Audio-Video Interconnection System," explain in their abstract:

A dynamic audio-video interconnection system for connecting together at least one television receiver and a plurality of peripheral units in home audio-visual installations. By means of a remote-control keyboard, the user transmits interconnection orders which are processed by a microprocessor in order to actuate electronic switches which effect the desired interconnection.

¹² Throughout the prosecution history, Harvey *et al.* used, as was (and is) customary under the rules governing patent prosecution, *see* 37 C.F.R. § 1.121, brackets to denote terms deleted from the claims. For clarity, however, those brackets have been replaced throughout the amendments to the claims with a strike through the deleted text.

ciated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay modification signals so as to modify the overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a particular user application, comprising the steps of

transmitting a video signal containing a television program signal to said receivers,

transmitting an instruct-to-overlay signal to said receivers, receiving said video signal at a plurality of receiver stations and displaying said program material on the video receivers of selected ones of said plurality of receiver stations,

detecting the presence of said instruct-to-overlay signal at said selected receiver stations and coupling said instruct-to-overlay signal to the computers associated with the video receivers of said selected stations, and

causing said last named computers to transmit their overlay signals to their associated television receivers, thereby to present a display at the selected receiver stations including the television program material and the related computer generated overlay.

21. (Amended) In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to transmit overlay video signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a particular user application, the steps of

transmitting a video signal containing a television program signal to said receiver stations, and

transmitting an instruct-to-overlay signal selectively embedded in said television program signal to thereby cause selected ones of said computers to transmit their overlay signals to their associated television receiver to present a combined display consisting of the television program and the related computer generated overlay.

24. (Amended) In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to transmit overlay video signals to their associated television receivers, said overlay signals causing the display of user

specific information related to said program material, and with at least some of said computers being programmed to process overlay modification signals so as to modify the overlay video signals transmitted to their associated receivers, each of said computers being programmed to accommodate a particular user application and wherein a video signal containing a television program signal and an instruct-to-overlay overlay signal are transmitted to said receiver stations, the steps of

receiving said video signal at a plurality of receiver stations and displaying said program material on the video receivers of selected ones of said plurality of receiver stations,

detecting the presence of said instruct-to-overlay signal at said selected receiver stations and coupling said instruct-to-overlay signal to the computers at said selected receiver stations, and receiver stations to transmit their overlay video signals to their associated television receivers, thereby to present a combined display at the selected receiver stations consisting of the television program and the related computer generated overlay.

26. (Amended) Television signal processor means, comprising carrier transmission receiving means, means for demodulating [sic] the output of said receiving means to detect a video program signal, means normally coupling said video signal to a television receiver, decoder means for determining the presence or absence of an embedded instruct-to-overlay signal in said video signal, computer means for transmitting video overlay signals, said overlay signals causing the display of user specific information related to said program material, and means connected to said computer means and responsive to said decoder means when the presence of said embedded signal is detected for coupling said overlay signals to said television receiver.

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02027-30.

b) Applicants' Remarks

In their remarks, Harvey *et al.* first explained their invention:

Applicants' invention enables the program content of a television program to be modified in a unique manner for each of a multiplicity of users (or viewers), by causing microprocessors located at the respective subscriber stations to generate video signals in response to a control signal in the transmitted video program material. In applicants' invention, the overlay video information is specific to the user and directly related to the video program material. For example, in the case of a program such as "Wall Street Week," the invention may be used to display investment information unique to a subscriber at the subscriber's station and at a precise point in the course of the program at which the specific information of the user relates directly to the transmitted information of more

formation of the user relates directly to the transmitted information of more general public interest. As a more specific example, the performance of each user's investment portfolio may be displayed at the user's TV set at a point during the program when each subscriber is asked to compare the performance of his or her own portfolio with measures of the overall performance of the general market.

Id. at PID02031. Harvey *et al.* described the foregoing as a "fundamental concept," and distinguished Bourasson *et al.* and Crosby, by arguing that those references "have nothing whatever to do with this fundamental concept and no conceivable combination of these references could result in applicants' invention." Bourasson *et al.*, Harvey *et al.* argued, "concerns a complex microprocessor controlled system for enabling a user to switch the primary input to a television set to any one of a number of alternate peripheral units."

These peripheral units, video or audio, are listed in column 4 at lines 38-68. A typical example of the way in which the Bourasson system is used is explained in column 8, line 56 et seq. Insofar as applicants can determine, in all cases in Bourasson, the viewer determines which of a multiplicity of separate peripheral units will be connected to the receiver. As sophisticated and complex as the Bourasson system may be, there is no suggestion of combining inputs from two or more input sources to provide a single program. There is no suggestion that the program material generated by any peripheral unit (or any other source) be coordinated in program content with the program material input to the TV set. There is surely no suggestion that video inputs can be automatically combined under the control of transmitted signals that may be embedded in transmitted video signals, to display user specific information in conjunction with a transmitted program.

Id. at PID02031-32. "Thus," Harvey *et al.* urged, "since the fundamental concept of applicants' invention is not disclosed in Bourasson, the secondary reference (Crosby) cannot be combined with Bourasson in such a way as to provide applicants' claimed system." *Id.* Furthermore, with respect to Crosby, Harvey *et al.* argued:

The Examiner states that "Crosby discloses the actuation of a device based on the use of a signal embedded in a television program", but Crosby does not disclose the concept of using an embedded signal to select video inputs to a television receiver (not that this general teaching by itself would suggest applicants' invention). In Crosby, the device actuated by the embedded signal is merely a recorder which allows the embedded signal to be recorded for the purpose of identifying the programs (more particularly, the commercials) being transmitted by a

selected broadcast station. There is no suggestion in Crosby that the embedded signal is to be used for control purposes, nor is there any reason why the embedded signal would be used for that purpose since Crosby seeks only to identify the programs being transmitted by the station. Moreover, there is no suggestion that Crosby's embedded signal may alter the input to the television receiver (as in applicants' invention), since the recorded data sought by Crosby would lose its integrity if the input to the receiver were switched from the frequency of the selected station being monitored.

Id. at PID02032-33.

Harvey *et al.* further distinguished their invention from Crosby and Bourassin by describing various "important" and "significant" features of their invention:

Hence, applicants' invention is neither suggested nor anticipated by any possible combination of Crosby and Bourassin. Indeed, since the references are directed to unrelated problems, there is no reason why anyone would seek to combine them. If they were combined, the result would be the interconnection system of Bourassin where in the program materials could be identified by using the embedded signal of Crosby so long as the station monitored by Crosby continued to be input to the TV receiver of the combined system. It is certainly not to be expected that the combination would result in the use of Crosby's embedded signal for the purpose of switching away from the selected station in Crosby to one or another of the peripheral units of Bourassin *et al.*, but even that combination would not satisfy the constraints [sic] of applicants' claims wherein a signal embedded in a video program signal causes a computer to transmit a user specific overlay signal related to that program material.

The claims distinguish in a number of ways over the references. In the first place, Bourassin is concerned only with the control of a single receiver station and not a multiplicity of subscribers as in applicants' case. A significant feature of applicants' invention is that each of a large number of individual subscribers is capable of interacting in a selective and individual way with the television program material broadcast to the entire population. Hence, considering independent claim 18 in relation to Bourassin, Bourassin does not transmit a video signal to a multiplicity of receivers; therefore, none of the fundamental features of independent claims 18, 21, 24 and 26 is disclosed in Bourassin since the claims require that the video signal and instruct-to-overlay signal be transmitted to a plurality of receiver stations.

Furthermore, as indicated above, an important feature of applicants' invention is that each of the microprocessors or computers are programmed to generate overlay signals which are specifically related to the user or subscriber as well as to the program material broadcast to the entire community. Thus, in applicants' in-

vention, when the embedded control signal causes the investment portfolios (for example) to appear on the screen, the displayed portfolio at each subscriber station will represent the portfolio specific to that subscriber. This concept of generating user specific information is not considered in Crosby and Bourassin.

Accordingly, to further clarify the distinctions between applicants' invention and the prior art, the claims have been amended to state that the overlay signals cause "the display of user specific information related to said program material." Since Bourassin does not even disclose a multiplicity of subscriber stations, obviously he does not suggest the possibility that a single transmitted control signal may cause the display of different overlay signals at the different subscriber stations. Crosby, of course, does not use the embedded signal for the purpose of modifying the visual display and, therefore, clearly cannot suggest the possibility that the control signal may generate user specific overlays at the individual subscriber stations.

Claims 19, 22, 25 and 28 still further distinguish over the cited references in requiring the transmission of an overlay modification signal to the computers (of the receiver stations) in order to modify the user specific display produced by the overlay signal. It seems clear that nowhere in the prior art is there disclosed the concept of modifying a computer generated information signal based on embedded control signals within a main video program.

Id. at PID02033-35.

6. Third Office Action – January 9, 1985

In a third office action, the examiner again rejected claims 18-30 under § 103 as unpatentable, this time over U.S. Patent No. 3,891,792 to Kimura ("Kimura")¹³ or U.S. Patent No.

¹³ Kimura, entitled "Television Character Crawl Display Method And Apparatus," explains in the abstract:

A method and apparatus for superimposing printed characters of any such nature as may be transmitted upon a received television image, at the will of the viewer at the receiver. The character information is incrementally transmitted during the vertical blanking interval of the television scanning format. The receiver is especially constructed to have a dynamic shift register, also means to manually select one or none of plural character programs; such as news, stock market, or weather. The characters may be made to crawl horizontally to present an extended message, which crawl may be halted by the viewer. The mandatory display of emergency messages is possible by a control located at the transmitter.

4,310,854 to Baer ("Baer")¹⁴ in view of Bourasson *et al.* and Crosby. See Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02038-39. Once again, the examiner's reasoning was brief:

Kimuar [sic] (Fig. 3, Col. 1) or Baer (Fig. 1, Col. 1) each disclose viewer controlled [sic] television systems in which a locally generated data is overlayed on the screen. Bourasson et al. teach as remotely actuated computer controlled overlay for a television display including a multitude [sic] of peripheral units. Crosby show[s] the actuation of a device based [sic] on a signal embedded in a television program. It is deemed obvious to provide Baer or Kimura with a locally generated overlay which is controlled by an embedded signal. It is further noted that each of Baer or Kimura overlay signals that are locally generated in response to an embedded signal.

Id. at PID02038. The examiner also cited U.S. Patent No. 4,264,925 to Freeman *et al.* ("Freeman *et al.*") "to show multi-information interfaces." *Id.*

7. Third Amendment – July 12, 1985

a) To the Claims

In response, Harvey *et al.* again amended their pending independent claims as follows (underlining and strikethroughs show additions and deletions, respectively):

18. (Twice Amended) A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay modification modification control signals so as to modify the overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a particular unique user application, comprising the steps of:

transmitting a video signal containing a television program signal to said receivers,

¹⁴ Baer, entitled "Television Captioning System," explains in the abstract:

Captioning of television presentations is achieved by transmitting digital data superimposed on the normal FM sound signal by modulation of an ultrasonic subcarrier and receiving the digital data at a viewer's television receiver by picking up the ultrasonic signal from the television receiver's loudspeaker, the received digital data being demodulated and applied to the television receiver as readable alphanumeric captions.

transmitting an instruct-to-overlay signal to said receivers,

receiving said video signal at a plurality of receiver stations and displaying said program material on the video receivers of selected ones of said plurality of receiver stations,

detecting the presence of said instruct-to-overlay signal at said selected receiver stations and coupling said instruct-to-overlay signal to the computers associated with the video receivers of said selected stations, and

causing said last named computers to generate and transmit their overlay signals to their associated television receivers in response to said instruct-to-overlay signal, thereby to present a display at the selected receiver stations including the television program material and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display unique to a specific user.

21. (Twice Amended) In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay video signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay control signals transmitted to their associate receivers, each of said computers being programmed to accommodate a particular unique user application, the steps of

transmitting a video signal containing a television program signal to said receiver stations, and

transmitting an instruct-to-overlay signal selectively embedded in said television program signal to thereby cause selected ones of said computers to gen-
erate and transmit their overlay signals to their associated television receiver to present a combined display consisting of the television program and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display unique to a specific user.

24. (Twice Amended) In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay video signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay modification control signals so as to modify the overlay video signals transmitted to their associated receivers, each of said computers being programmed to ac-

commodate a particular unique user application, and wherein a video signal containing a television program signal and an instruct-to-overlay signal are transmitted to said receiver stations, the steps of

receiving said video signal at a plurality of receiver stations and displaying said program material on the video receivers of selected ones of said plurality of receiver stations,

detecting the presence of said instruct-to-overlay signal at said selected receiver stations and coupling said instruct-to-overlay signal to the computers at said selected receiver stations, and

causing the computers at said selected receiver stations to generate and transmit their overlay video signals to their associated television receivers in response to said instruct-to-overlay signal, thereby to present a combined display at the selected receiver stations consisting of the television program and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display unique to a specific user.

26. (Twice Amended) Television signal processor means, comprising carrier transmission receiving means, means for demodulating [sq] the output of said receiving means to detect a video program signal, means normally coupling said video signal to a television receiver, decoder means for determining the presence or absence of an embedded instruct-to-overlay signal in said video signal, computer means for generating and transmitting video overlay signals, said overlay signals causing the display of user specific information related to said program material, and means connected to said computer means and responsive to said decoder means when the presence of said embedded signal is detected for coupling said overlay signals to said television receiver, the overlays displayed at a multiplicity of said receiver stations being different, with each display unique to a specific user.

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02040-43.

b) Applicants' Remarks

(1) Generally

In their remarks, Harvey *et al.* explained that, in their two previous amendments, they had “explained the invention and the manner in which the video overlay information generated by local computers interacts with the transmitted program information,” and would not repeat that. However, Harvey *et al.* argued that “there is a basic misunderstanding as to what it is that applicants are

attempting to claim." *Id.* at PID02044. Harvey *et al.* explained that their invention "deals with a system wherein each of a large number of subscribers (for example thousands or more) may wish to combine with a television program [sic] being transmitted to all subscribers." Specifically, Harvey *et al.* urged:

Applicants show (1) a conventional television transmission and (2) a fully integrated system of many computers operating at once to process locally recorded data under control of a common set of control instructions input to all computers simultaneously at a single input source. This system generates unique user specific information at each subscriber station. Then upon instruction it automatically outputs this information to a multiplicity of television receivers (each of which is at a specific subscriber station) thereby generating distributed user specific combined television information and displaying it to a large audience. At each subscriber station, this system displays user specific information that is private and unique to the subscriber and is neither known at the input source nor revealed at any other subscriber station. In accordance with the invention, it is possible for each subscriber automatically and simultaneously to combine with the program content in a unique way. This is not possible in any of the cited references nor in the proposed combination of references.

In the example considered in the two prior amendments, it is contemplated that each individual subscriber viewing the "Wall Street Week" program would be able to view information relating to his or her own stock portfolio that would be displayed automatically at an appropriate time in the program when the subscriber could compare his or her own unique portfolio performance information with related information contained in the program of relevance to all subscribers. This unique information is generated automatically at each subscriber station by a local computer that contains recorded data (known only to the subscriber) and operates on the basis of the transmitted control instructions that control all subscriber station computers at once. Specifically, each and every subscriber could determine whether his or her own portfolio overperformed or underperformed the portfolio of all-on-average as well as the degree of over or underperformance. [Emphasis in original.]

Id. at PID02044-45.

(2) Regarding Kimura and Baer

According to Harvey *et al.*, "[t]his fundamental concept of distributed automatic simultaneous unique combination is completely unlike anything disclosed in the new principal references, Kimura and Baer. Indeed, nothing in Kimura and Baer even suggests the fundamental concept of

unique interaction." *Id.* at PID02046 (emphasis in original). Harvey *et al.* further explained that "[i]nsofar as the present invention is concerned, both Kimura and Baer are the same."

In each case, a selected message stream may be superimposed upon a television image at the will of the viewer at the receiver. In each case, the various message streams to be superimposed upon a television image at the will of the viewer at the receiver. In each case, the various message streams to be superimposed on the image are transmitted to the apparatus of Kimura and Baer along with the video information.

For example, Kimura explains at column 7, lines 33 *et seq.* that "a typical number of separate messages is five; such as weather reports, stock market quotations, news, etc." These message streams are transmitted to the receivers as "character forming data" signals, and a viewer may select any one of these separate message streams to be displayed along with the transmitted video image. In Kimura, there is no relationship between the message data and the program content, but that is beside the point. The important facts are that there are no instructions that control microprocessors or computers and that, in each case, the only message information available to the viewer is the message streams that are transmitted to the receiver along with the video information. Thus, each receiver is only capable of displaying information which has been transmitted to it; there is no generation of the overlay information (user specific or otherwise) at the receiver.

Baer is similar. This patent concerns a television captioning system for display of "news, weather, stock market items and the like" (col. 1, lines 9 and 10) or captioning for viewers "who may have need of an alternate language than that being used by the performers on screen" (col. 1, lines 13-16). In Baer, the digital data representing the captioned material is superimposed on the transmitted FM sound signal by means of an ultrasonic subcarrier. This information is then used to generate the desired video signals which are displayed at the receiver.

Id. at PID02046-47.

Returning to the examiner's contention that "both Kimura and Baer 'disclose viewer controlled television systems in which a locally generated data is overlaid on the screen,'" Harvey *et al.* contended that "this is an inaccurate interpretation of the primary references since, in both cases, the overlay information is not locally generated but is instead transmitted." According to Harvey *et al.*:

It is true that the transmitted information is then used to control the generation of overlay signals at the receiver, but it is clearly not the case that the overlay data is generated at the receiver. Moreover, as the Examiner apparently recognizes, in

no case is there a suggestion that the embedded signal can be used to cause the generation of the overlay. In fact, it is more accurate to state that the captioned overlay signals in Kimura and Baer are themselves embedded signals.

By the nature of both Kimura and Baer, only a relatively small number of captioned signals (e.g., 5) is possible. All are transmitted to all subscribers, and no computer control instructions are transmitted.

Id. at PID02047. Harvey *et al.* contrasted their invention, urging that "there is no character forming data transmitted; only computer control signals are transmitted. No overlay signals are transmitted to all subscribers; all are generated locally. In applicants' case, there are likely to be as many different overlay signals as there are subscribers, and there is no reason why this could not number in the thousands or tens of thousands or higher." *Id.* at PID02047-48. Harvey *et al.* then further distinguished Kimura and Baer:

In applicants' view, the claims as amended on October 4, 1984 distinguish over the primary references by virtue of the foregoing distinction. "User specific information" means information which is unique to a user. This is completely unlike Kimura and Baer where the overlay signals are transmitted to all users and there is no user specific information. However, in order to avoid any question, applicant has further amended the independent claims to state that the overlays displayed at a multiplicity of the receiver stations are different and unique to a specific user. Since the claims already require that the computer generate "user specific information related to said program material," it is clear that the claims expressly require that each of a multiplicity of receivers have the ability to generate video overlay information which is unique to that receiver and which is related to the program content. In both Kimura and Baer, there are relatively few overlay signals and none of the overlay signals is unique to the individual receivers (in many cases, the overlay signals are also not related to the program content). [Emphasis in original.]

Id. at PID02048.

Harvey *et al.* then turned to the examiner's statement "that it would be 'obvious to provide Baer or Kimura with a locally generated overlay which is controlled by an embedded signal.'" *Id.* at PID02048. According to Harvey, "this is not an issue in this case (since the combination would not result in the claimed invention), the statement is clearly in error." *Id.* As for Kimura, Harvey *et al.* argued that "Kimura specifically states that the purpose of his invention is to display the superimposed characters 'at the will of the viewer at the receiver' (see the Abstract). Hence, if an embedded

signal were to control the display of the overlay characters, the viewer would lose control and the very object of the patent would be defeated. Thus, the proposed combination is improper.” *Id.* at PID02048-49. As for Baer, Harvey *et al.* urged that “Baer is directed primarily to a system for captioning for the deaf or captioning of an alternative language which would not require selective transmission of an overlay signal. Thus, there would be no reason to modify the Baer disclosure to provide an embedded control signal as in applicants’ case where a unique computer generated overlay message for each viewer is displayed at a particular time during a prolonged video program.” *Id.* at PID02049.

“(3) Regarding Bourassin *et al.*

Harvey *et al.* next addressed the examiner’s statement that “‘Bourassin *et al* teach a remotely actuated computer controlled overlay for a television display including a multitude of peripheral units.’” *Id.* Harvey *et al.* admitted “[t]his is true, but only to the extent that Bourassin discloses the use of a microprocessor to connect any of a multiplicity of peripheral units to a television receiver. Regardless of how the reference is interpreted, Bourassin cannot be said to relate to a subscriber system wherein each of a multiplicity of subscribers can interact uniquely, automatically and simultaneously with transmitted program material. Obviously, this is the essence of applicants’ claimed invention.” *Id.*

Harvey *et al.* further urged that “[t]o further distinguish applicants’ claims over the cited references, applicants have amended the independent claims in this application to state that the computers at the respective receiver stations are ‘adapted to generate and transmit overlay signals...’. Moreover, the amended claims require that the computers be caused ‘to generate and transmit their overlay signals to their associated television receivers in response to the instruct-to-overlay signal...’. Bourassin’s concept of using a microprocessor to selectively connect peripheral units to a receiver cannot possibly be construed to read on the concept of a computer generating video signals and transmitting them in response to an instruct-to-overlay signal, as clearly set forth in all of applicants’ pending claims.” *Id.* at PID02049-50.

(4) Generally

According to Harvey *et al.*, "it is inherent in the claims that the instruct-to-overlay signal not be a video signal which is displayed but, instead, function as a control signal to cause a video signal to be generated and transmitted to the receiver by a computer. For this reason, applicant has not proposed to further amend the claims to make this distinction express, but if it is the Examiner's position that applicants' instruct-to-overlay signal is comparable to the embedded video signals in Kimura and/or Baer, then applicants would be willing to further amend the claims to specify that the instruct-to-overlay signal is not to be displayed." *Id.* at PID02050.

With respect to the dependent claims, Harvey *et al.* urged:

Although the Examiner has lumped all of applicants' claims together, there are important differences and the dependent claims are patentable in their own right. Specifically, claims 19, 22, 25 and 28 require the transmission of an overlay modification signal to the individual computers. This enables altering the graphic technique used to represent the underlying date (e.g., a bar chart vs. a pie chart) or otherwise modifying each of the unique user specific computer generated overlay signals and is clearly not suggested in any of the cited references. Indeed, the fundamental concept of using computers or data processing means to generate computer overlay signals is not disclosed in the primary references; therefore, the requirement of independent claims 18, 21 and 24 that at least some of the computers be "programmed to process overlay modification control signals so as to modify the overlay signals transmitted to their associated receivers" cannot be suggested in the references.

Id. at PID02050-51.

8. Supplemental Amendment – August 26, 1985

a) To the Claims

Harvey *et al.* supplemented their amendment of July 12, 1985, by further amending their independent claims (underlining shows additions):

18. (Three Times Amended) A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay signals to their associated television receivers, said overlay signals causing

the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay modification control signals so as to modify the overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a unique special user application, comprising the steps of:

transmitting a video signal containing a television program signal to said receivers,

transmitting an instruct-to-overlay signal to said receiver stations at a time when the corresponding overlay is not being displayed,

receiving said video signal at a plurality of receiver stations and displaying said program material on the video receivers of selected ones of said plurality of receiver stations,

detecting the presence of said instruct-to-overlay signal at said selected receiver stations and coupling said instruct-to-overlay signal to the computers associated with the video receivers of said selected stations, and

causing said last named computers to generate and transmit their overlay signals to their associated television receivers in response to said instruct-to-overlay signal, thereby to present a display at the selected receiver stations including the television program material and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display unique special to a specific user.

21. (Three Times Amended) In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay video signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay control signals transmitted to their associated receivers, each of said computers being programmed to accommodate a unique user application, the steps of

transmitting a video signal containing a television program signal to said receiver station, and an instruct-to-overlay signal selectively embedded in said television program signal at a time when the corresponding overlay is not being displayed to thereby cause selected ones of said computers to generate and transmit their overlay signals to their associated television receiver to present a combined display consisting of the television program and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display unique special to a specific user.

24. (Three Times Amended) In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay video signals to their associated television receivers causing the display of user specific information, said overlay signals related to said program material, and with at least some of said computers being programmed to process overlay modification control signals so as to modify the overlay video signals transmitted to their associated receivers, each of said computers being programmed to accommodate a unique special user application, and wherein a video signal containing a television program signal and an instruct-to-overlay signal are transmitted to said receiver stations, the steps of

receiving said video signal at a plurality of receiver stations and displaying said program material on the video receivers of selected ones of said plurality of receiver stations,

detecting the presence of said instruct-to-overlay signal at said selected receiver stations at a time when the corresponding overlay is not being displayed, and coupling said instruct-to-overlay signal to the computers at said selected receiver stations, and

causing the computers at said selected receiver stations to generate and transmit their overlay video signals to their associated television receivers in response to said instruct-to-overlay signal, thereby to present a combined display at the selected receiver stations consisting of the television program and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display unique special to a specific user.

26. (Three Times Amended) Television signal processor means, comprising carrier transmission receiving means, means for demodulating the output of said receiving means to detect a video program signal, means normally coupling said video signal to a television receiver, decoder means for determining the presence or absence of an embedded instruct-to-overlay signal in said video signal at a time when the corresponding overlay is not being displayed, computer means for generating and transmitting video overlay signals, said overlay signals causing the display of user specific information related to said program material, and means connected to said computer means and responsive to said decoder means when the presence of said embedded signal is detected for coupling said overlay signals to said television receiver, the overlays displayed at a multiplicity of said receiver stations being different, with each display unique special to a specific user.

b) Applicants' Remarks

Harvey *et al.* urged that their supplemental amendment was intended to further distinguish their invention from Kimura and Baer:

By this supplemental amendment, applicants are proposing to amend the claims so as to further distinguish the signal processing apparatus and method of this invention from the Kimura and Baer references. Specifically, it is applicants' intent to make clear that the claims cannot possibly be construed to cover television systems wherein embedded signals are displayed at a multiplicity of receiver sites (as opposed to causing a computer generated overlay to be displayed). The reason for this amendment is explained below.

By the nature of both Kimura and Baer, once the subscriber manually starts the system, the apparatus transmits overlay signals continuously that are superimposed on the television display. Thus, the contents of shift register 182 in Kimura or raster scan alphanumeric converter 70 in Baer are continuously visible to the subscriber. Embedded signals do not cause the process of generation, transmission and display. In Kimura and Baer, if the superimposed message stream has any relationship with the television program content what[so]ever, that relationship is continuous. There is no suggestion whatsoever that the overlay may be superimposed only periodically.

By contrast, in applicants' case the overlay is only transmitted and displayed at those particular moments during the television program presentation when it is relevant. At all other times when overlay information might distract or confuse the subscriber rather than enhance the program presentation, no overlay information is displayed at the television receiver even though all apparatus is on.

In the "Wall Street Week" example, the first graphic overlay is not transmitted to the television receiver and displayed until the television program host states, "And here is what your portfolio did." Then under control of the instruct-to-overlay signal, it is transmitted to the television receiver and displayed for a particular brief period after which its transmission and display ceases.

Applicants have sought to emphasize this distinction in the past by requiring that the computers "generate and transmit" the overlay signals, and arguably, this distinction is inherent in the existing claims. However, to insure that the Examiner will not construe the pending claims to cover systems such as shown by Kimura and Baer, applicants are further amending the claims to state that the signal which causes the generation of an overlay signal is transmitted at a time when the actual overlay itself is not being displayed. Clearly, there is no way in which Kimura and/or Baer can be construed so as to incorporate this feature of applicants' claims.

Id. at PID02057-58.

9. Notice of Allowability – September 19, 1985

The examiner issued a Notice of Allowability on September 19, 1985. *See* Plaintiffs' Opening Markman Brief, Apx. F (Vol. 3 of 7) at PID02059. Harvey *et al.* thereafter paid the issue fee on December 22, 1985. *See id.* at PID02062.

10. First Amendment After Allowance – December 18, 1985

Just prior to paying the issue fee, however, Harvey *et al.* submitted the first of two "amendments after allowance" under 37 C.F.R. § 1.312.¹⁵

a) To the Claims

Harvey *et al.* amended, for the fourth time, pending independent claim 21 (strikethroughs show deletions):

21. (Four Times Amended) In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay video signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay control signals transmitted to their associated receivers, each of said computers being programmed to accommodate a unique user application, the steps of

transmitting a video signal containing a television program signal to said receiver stations, and

transmitting an instruct-to-overlay signal selectively embedded in said television program signal at a time when the corresponding overlay is not being displayed to thereby cause selected ones of said computers to generate and transmit their overlay signals to their associated television receiver to present

¹⁵ Section 1.312, entitled "Amendments After Allowance," provides:

No amendment may be made as a matter of right in an application after the mailing of the notice of allowance. Any amendment filed pursuant to this section must be filed before or with the payment of the issue fee, and may be entered on the recommendation of the primary examiner, approved by the Director, without withdrawing the application from issue.

a combined display consisting of the television program and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display unique to a specific user.

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02063-64.

b) Applicants' Remarks

Harvey *et al.* amended application claim 21, as they explained, "to delete the requirement that the instruct-to-overlay signal be embedded in the television program signal," because "[u]pon re-viewing this application prior to payment of the final fee, applicants became aware of an inconsistency between claims 18 and 24 (on the one hand) and claim 21." Harvey *et al.* reasoned thus:

Claim 18 which is directed to a method of communicating television program material does not require that the instruct-to-overlay signal be embedded in the television program material. Likewise, claim 24 which is directed to the receiving process does not require that the instruct-to-overlay signal be embedded in the program. However, claim 21 which is directed to the transmitting portion of the process states that the instruct-to-overlay signal is "selectively embedded in said television program signal." Applicants respectfully submit that in the broad context of the invention, and consistent with claims 18 and 24, it is not necessary that the instruct-to-overlay signal be an embedded signal. At no time has patentability of claim 18 been predicated on the fact that the instruct-to-overlay signal is an embedded signal, and applicants have recognized that the concept of embedding a control signal in a television signal is shown in the prior art.

Since claims 18 and 24 have been allowed, it is apparent that the Examiner also did not regard applicants' broad invention as residing in the concept of embedding a control signal in the program material. Furthermore, it is obvious that no further searching is required since claims which do not call for an embedded signal have been searched and found allowable.

Id. at PID02064-65.

11. Second Amendment After Allowance – January 23, 1986

Little more than a month later, Harvey *et al.* submitted another amendment under 37 C.F.R. § 1.312. In that amendment, Harvey *et al.* explained that they could not fit the various formal drawings on single sheets and still meet PTO requirements. Thus, they submitted new drawing sheets,

and changed the specification to reflect those new drawings. Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02068-69.

12. Petition To Withdraw Application From Issuance – April 30, 1986

Before their application issued, Harvey *et al.* petitioned that their application be withdrawn from issuance pursuant to 37 C.F.R. § 1.313. Harvey *et al.* explained that their purpose was “reopening prosecution for new grounds of rejection.” See Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02092.

13. Withdrawal of Application From Issuance – May 12, 1986

A petitions examiner granted Harvey *et al.*'s petition to withdraw their application from issuance. Accordingly, Harvey *et al.*'s application was withdrawn from issuance on May 12, 1986. See Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02088-91, -02093.

14. Post-Withdrawal Office Action – August 12, 1986

In a post-withdrawal office action, the examiner rejected pending claims 20, 23 and 27 and allowed the rest. See Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02095. According to the examiner, those claims were “all drawn to new matter,” and reopened prosecution on the merits with respect to those claims. The examiner objected to the specification under § 112(1) “as being drawn to new matter” and noted:

In claims 20 and 23 there is no support in the original disclosure for the instruct-to-overlay signal being embedded in the vertical blanking interval. The signal was only disclosed as being somewhere in the transmission, but the exact location was never specified.

In claim 27, lines 2-5, there is no support in the original disclosure of a “means (which) ... disconnects said video program signal from said television receiver upon detection of said embedded (instruct-to-overlay) signal.” To perform such a disconnection would defeat the overlay concept since there would no longer be an overlay without the video program signal on the receiver.

The examiner rejected claims 20, 23 and 27 under § 112(1) "for the reasons set forth in the objection to the specification." The examiner also required the applicants "to state the differences between [U.S. Patent No. 4,138,726 to] Girault *et al.* ["Girault *et al.*"¹⁶] and the allowed claims." *Id.* at PID02097-98.

15. Post-Withdrawal Amendment – March 6, 1987

a) To the Claims

In response, Harvey *et al.* amended claims 18, 21, 24 and 26 by changing the word "unique" to "specific." Harvey *et al.* also amended claims 20, 23 and 27 as follows:

20. (Amended) A method according to claim 18, wherein said instruct-to-overlay signal is embedded in the vertical blanking interval of said video signal outside the range of the television picture.

23. (Amended) A method according to claim 21, wherein said instruct-to-overlay signal is embedded in the vertical blanking interval of said video signal outside the range of the television picture.

Claim 27, last line, change "presence" to -- absence--.

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02108-9.

b) Applicants' Remarks

Harvey *et al.* urged that "[c]laims 20, 23 and 27 have been amended to overcome the Examiner's objections." In addition, Harvey *et al.* explained that amending claims 18, 21, 24 and 26 to change the word "unique" to "specific" was "not intended to affect the scope of the claims but upon review of the application, it was realized that the term 'unique' may convey the thought that the invention requires that the display at each of the subscribers must necessarily be different. Al-

¹⁶ Girault *et al.*, entitled "Airborne Arrangement For Displaying A Moving Map," explain in the abstract:

An airborne arrangement for displaying a moving map and aerial-navigation data such as symbols and characters on an electronic display screen is disclosed. It comprises a video map generator for converting the map to be displayed, carried on a film, into a video signal of the television type, a symbol generator which produces signals of the navigational data to be displayed with random scan, and an oscilloscope provided with switching circuits for consecutively displaying these items in the course of each frame cycle.

though, in the example given, this is typically the case since it is highly unlikely that any two subscribers would have the same stock portfolio, it would appear to be self-evident that the invention would nevertheless apply to a situation where some number of subscribers had exactly the same portfolio. In that case, the user specific information displayed at the subscriber's television receiver would be the same for each of such subscribers. In that sense, arguably the information might not be 'unique' although it would still be 'specific.' " Harvey *et al.* added that they believed "that the Examiner will have no objection to this proposed change since clearly the invention is concerned with the display of user specific information as opposed to the display of 'unique' information. In that sense, the proposed amendments may actually avoid a possible inconsistency." *Id.* at PID02109-10.

With respect to claim 18, Harvey *et al.* urged:

Applicants have also amended claim 18, line 16 to change "receivers" to -- receiver stations--. This change is also not intended to affect the scope of the claim but, upon review of this allowed claim, it was thought that the term "receivers" may suggest that the instruct-to-overlay signal must be received by a television receiver. Consistent with the comments presented in Paragraph 2 of the Remarks submitted in applicants' Amendment Under 37 C.F.R. 1.312 on December 3, 1985, it is applicants' intention to make clear that the instruct-to-overlay signal need not be included in the transmitted television signal.

Id. at PID02110.

Regarding claims 20 and 23, Harvey *et al.* noted that "[c]laims 20 and 23 were objected to on the grounds that there is no support in the original disclosure for the instruct-to-overlay signal being embedded in the vertical blanking interval." Accordingly, Harvey *et al.* urged, "both claims 20 and 23 have been amended to state that the instruct-to-overlay signal 'is embedded in said video signal outside the range of the television picture.' This is consistent with the specification, page 8, lines 6-11 in which it is stated:

'They (the embedded signal) may appear in various and varying locations. In television they may appear on one line in the video portion of the transmission, or on a portion of one line, or on more than one line, and will probably lie outside the range of the television picture displayed on a normally tuned television set.' "

Id. at PID02110-11.

Finally, with respect to Girault *et al.*, Harvey *et al.* urged that the "essential difference" between that reference and their invention was as follows:

In essence, applicants' broad claims are directed to the concept of transmitting common program material to a multiplicity of subscribers and then, upon transmission of the instruct-to-overlay signal, causing a computer at each of the subscriber stations to cause television information specific to that subscriber to appear at the subscriber's television receiver. Thus, at a common point in a television program broadcast to numerous subscribers, each subscriber may perceive information specific to that subscriber only.

Girault relates to an aerial navigation system wherein a moving map and aerial navigation data relevant to an individual pilot is displayed. The pilot only observes on his video screen a display of navigational information that is relevant to him. The essential concept of applicants' invention, namely, the periodic overlaying of user specific information with program material common to a large audience is not disclosed in Girault. Indeed, it would appear clear that in Girault, there can be no possibility of transmitting the data to be displayed to a large audience since, in Girault, each pilot ("subscriber") is only interested in the navigational data that is relevant to him. In short, nothing in Girault suggests the possibility of periodically combining user specific information with generally broadcast information; moreover, any such system would be contrary to the navigational scheme of Girault.

Id. at PID02112.

16. Second Notice of Allowability – March 19, 1987

Apparently persuaded, the examiner allowed the pending claims, and Harvey *et al.*'s application thereafter issued on September 15, 1987. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02116-21.

17. Issued Independent Claims

Harvey I issued with 13 claims. Application claims 18-30 were renumbered as claims 1-13, of which claims 1, 4, 7 and 9 are independent claims and are reproduced below for reference:

1. A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay signals to their associ-

ated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay modification control signals so as to modify the overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a specific user application, comprising the steps of:

transmitting a video signal containing a television program signal to said receivers,

transmitting an instruct-to-overlay signal to said receiver stations at a time when the corresponding overlay is not being displayed,

receiving said video signal at a plurality of receiver stations and displaying said program material on the video receivers of selected ones of said plurality of receiver stations,

detecting the presence of said instruct-to-overlay signal at said selected receiver stations and coupling said instruct-to-overlay signal to the computers associated with the video receivers of said selected stations, and

causing said last named computers to generate and transmit their overlay signals to their associated television receivers in response to said instruct-to-overlay signal, thereby to present a display at the selected receiver stations including the television program material and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display specific to a specific user.

4. In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay video signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay control signals [sic] transmitted to their associated receivers, each of said computers being programmed to accommodate a unique user application, the steps of

transmitting a video signal containing a television program signal to said receiver stations, and

transmitting an instruct-to-overlay signal at a time when the corresponding overlay is not being displayed to thereby cause selected ones of said computers to generate and transmit their overlay signals [sic] to their associated television receiver to present a combined display consisting of the television program and the related computer generated overlay, the overlays displayed

at a multiplicity of said receiver stations being different, with each display unique to a specific user.

7. In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay video signals, to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay modification control signals so as to modify the overlay video signals transmitted to their associated receivers, each of said computers being programmed to accommodate a specific user application, and wherein a video signal containing a television program signal and an instruct-to-overlay signal are transmitted to said receiver stations, the steps of

receiving said video signal at a plurality of receiver stations and displaying said program material on the video receivers of selected ones of said plurality of receiver stations,

detecting the presence of said instruct-to-overlay signal at said selected receiver stations at a time when the corresponding overlay is not being displayed, and coupling said instruct-to-overlay signal to the computers at said selected receiver stations, and

causing the computers at said selected receiver stations to generate and transmit their overlay video signals to their associated television receivers in response to said instruct-to-overlay signal, thereby to present a combined display at the selected receiver stations consisting of the television program and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display specific to a specific user.

9. Television signal processor means, comprising carrier transmission receiving means, means for demodulating the output of said receiving means to detect a video program signal, means normally coupling said video signal to a television receiver, decoder means for determining the presence or absence of an embedded instruct-to-overlay signal in said video signal at a time when the corresponding overlay is not being displayed, computer means for generating and transmitting video overlay signals, said overlay signals causing the display of user specific information related to said program material, and means connected to said computer means and responsive to said decoder means when the presence of said embedded signal is detected for coupling said overlay signals to said television receiver, the overlays displayed at a multiplicity of said receiver stations being different, with each display specific to a specific user.

C. Disputed Terms

1. "television program material"

The disputed term appears in asserted claims 1 and 4. Claim 1 is reproduced in pertinent part for reference, with the disputed term in boldface:

1. A method of communicating **television program material** to a multiplicity of receiver stations each of which includes a television receiver and computer, * * *, comprising the steps of:

transmitting a video signal containing a television program signal * * *

transmitting an instruct-to-overlay signal to said receiver stations * * *

receiving said video signal at a plurality of receivers* * *

detecting the presence of said instruct-to-overlay signal * * *, and

causing said last named computers to generate and transmit their overlay signals to their associated television receivers in response to said instruct-to-overlay signal, thereby to present a display at the selected receiver stations including the **television program material** and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display specific to a specific user.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

Video/graphics and audio material, such as sent as part of a mass-medium transmission, including television program content.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

Television program content including a video portion and accompanying studio generated text and/or graphics, and an audio portion included as part of a mass-medium transmission.

Post-Hearing: [no change]

Plaintiffs' Harvey I Chart at 1; Defendants' Harvey I Chart at 2; Joint Summary at 1.

According to the defendants, "the parties dispute whether 'television program material' can be graphics only or instead must include a video portion in addition to any text and/or graphics generated by the program transmission source." The defendants urge that there is "absolutely no disclosure, nor any suggestion, in the intrinsic record that 'television program material' may be

graphics only or graphics and audio only. Instead, the only ‘television program material’ disclosed in the intrinsic record is conventional television programming (including video and audio) transmitted to all receiver stations, *i.e.*, as a mass medium transmission, with accompanying television studio-generated graphics or test.” Defendants’ Opening *Markman* Brief at 11-13. *See also* *Markman* Tr. at 425:10-17 (Defendants: “The dispute of the parties is this, is whether or not you have to have video or it can be just graphics. Our position is that there has to be some video present in construing this claim. It cannot be just a graphic. And that’s -- the examples they give in the specification is the NBC Nightly News, Wall Street Week, Julia Childs and that’s basically our summary.”), and 432:9-11 (Defendants: “[I]f you look at television program material, television program, the other side is contending that that can just be graphics.”).

PMC does not address this term in its *Markman* briefs.

b) Discussion

Turning first to the customary meaning of the term “television program material,” none of the dictionaries proffered by the parties define that term *per se*. Nevertheless, “simply because the phrase as a whole lacks a common meaning does not compel a court to abandon its quest for a common meaning and disregard the established meanings of the individual words.” *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1372 (Fed. Cir. 2003). One source defines the term “television” as “1: the transmission and reproduction of transient images of fixed or moving objects; *specif.* an electronic system of transmitting such images together with sound over a wire or through space by apparatus that converts light and sound into electrical waves and reconverts them into visible light rays and audible sound.” Defendants’ Opening *Markman* Brief, Exh. 54A: WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY 2351 (1981). That source also defines “program” as “b: the performance or execution of a program; *esp.*: a performance broadcast on radio or television,” *id.* at 1812, and “material” as “of or relating to the matter of a thing and not to its form.” *Id.* at 1392. In sum, the term “television program material” should be understood to connote, as the parties suggest, television program content. That is, the disputed term connotes what is presented, rather than how that content is presented through television – which is what the parties appear to dispute. The term does not connote a particular form of television program content. At most, the disputed term,

i.e., the “television” part of the limitation, connotes transient images, but does not *per se* require those images to include video, or otherwise exclude graphics.

The specification is in accord. *See Combined Systems, Inc. v. Defense Tech. Corp. of Am.*, 350 F.3d 1207, 1215 (Fed. Cir. 2003) (“As we have recently stated, ‘[t]he written description must be examined in every case, because it is relevant not only to aid in the claim construction analysis, but also to determine if the presumption of ordinary and customary meaning is rebutted.’ ”). To begin with, Harvey *et al.* defined “programming” in their Abstract¹⁷ as “everything transmitted over television or radio intended for communication of entertainment or to instruct or inform.” Although the specification does not use the term “television program material” *per se*, it does provide examples of television programming. Specific examples of television programming include Julia Childs’ “The French Chef,” *see Harvey I*, col. 20, line 18, the “NBC Network Nightly News,” *see id.* at col. 16, line 34, and “Wall Street Week.” *See id.* at col. 19, line 7. Those programs, of course, include both video and audio, and are, even today, readily recognized mass-medium transmissions. Thus, the “television program material” may be presented as video and audio.

Furthermore, according to the specification, studio-generated graphics may also be transmitted for display on a television receiver. For example, during “Wall Street Week,” Harvey *et al.* explain, “the host says, ‘Here is what the Dow Jones Industrials did [in] the past week,’ and a studio generated graphic is pictured. The host then says, ‘Here is what the broader NASDAQ index did in the week past,’ and a studio generated graphic overlay is displayed on top of the first graphic. Then the host says, ‘And here is what your portfolio did.’ ” *Id.* at col. 19, lines 57-60. At that point, Harvey *et al.* further explain, the television station sends a signal to a subscriber’s computer to instruct the computer to display a computer-generated graphic of the subscriber’s own portfolio. *Id.* at col. 19, line 60 to col. 20, line 7. Clearly, studio-generated graphics are another way of presenting “television program material” through television.

And that answers the question as to whether “television program material” may be graphics only, or graphics and audio only. As discussed above, the term “television,” as customarily under-

¹⁷ The Federal Circuit has held that an abstract may be used when construing claims, despite the contrary language of 37 C.F.R. § 1.72(b), PTO Rule 72(b). *See Hill-Rom Co. v. Kinetic Concepts, Inc.*, 209 F.3d 1337, 1341 n.1 (Fed. Cir. 2000).

stood, generally connotes transmission of transient images, *e.g.*, video, usually together with sound. Those "transient images," according to Harvey *et al.*, may include studio-generated graphics, as well. Thus, the "television program material" may appear to the viewer as a programmed mix of studio-generated video, audio and graphics. Nothing in the intrinsic evidence requires, however, that "television program material," such as "Wall Street Week," always include video. Taking the "Wall Street Week" program, for example, that program could, as explained above, begin with a video and audio transmission of a host discussing stock performance. The "transient image" could change, again as discussed in the above example, to graphics. The specification does not require that the host continues speaking while the graphics are displayed, or whether the graphics are displayed simultaneously with a video of, say, the host, or whether some other permutation of video, audio and graphics is used. Nevertheless, the nature of television is, as its definition suggests, transience of the image shown on the television screen, and usually includes sound. That is, the television program may be at one moment video and audio, and in the next, graphics and audio, and in the next, graphics only, and in the next, video and graphics only, *etc.* The point is that there are many permutations of video, audio and graphics that television programmers may use. Nothing in the claims nor the specification require that "television program material" must always include video. Nor does the prosecution history support the defendants' contention that "television program material" must include video. During prosecution, Harvey *et al.* did not characterize the "television program material" used in their invention as requiring video, or otherwise disclaim an all-graphics television image, or distinguish over prior art on that basis. Thus, the defendants' contention to the contrary must be rejected.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

"Television program material" means television program content presented in video, audio, and/or graphics through a television.

2. "overlay signals" & "overlay video signals"

The disputed term appears in asserted claims 1 and 4. Claim 1 is again reproduced in pertinent part for reference, with the disputed term in boldface:

1. A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit **overlay signals** to their associated television receivers, said **overlay signals** causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay modification control signals so as to modify the **overlay signals** transmitted to their associated receivers, each of said computers being programmed to accommodate a specific user application, comprising the steps of:

transmitting a video signal containing a television program signal * * *

transmitting an instruct-to-overlay signal to said receiver stations * * *

receiving said video signal at a plurality of receivers* * *

detecting the presence of said instruct-to-overlay signal * * *, and

causing said last named computers to generate and transmit their **overlay signals** to their associated television receivers in response to said instruct-to-overlay signal, thereby to present a display at the selected receiver stations including the television program material and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display specific to a specific user.

Asserted claim 4 uses the somewhat different term "overlay video signal," which the parties say should be construed in the same way as "overlay signals." In asserted claim 4, the term "overlay video signal" appears thus, in boldface (occurrences of "overlay signals" are also in boldface):

4. In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit **overlay video signals** to their associated television receivers, said **overlay signals** causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay control signals transmitted to their associated receivers, each of said computers being programmed to accommodate a unique user application, the steps of:]

transmitting a video signal containing a television program signal to said receiver stations, and

transmitting an instruct-to-overlay signal at a time when the corresponding overlay is not being displayed to thereby cause selected ones of said computers to generate and transmit their **overlay signals** [sic] to their associated television receiver to present a combined display consisting of the television program and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display unique to a specific user.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

A signal that is generated by the computer and transmitted to its associated receiver to present a simultaneous display or presentation of the overlay and the television program. Such signals may include graphical, video and textual content to be presented with other content, such as the television program material.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

[V]ideo signals, specific to a particular user at the subscriber receiver station, locally generated by the subscriber's computer, in response to an instruct-to-overlay control signal transmitted in the television program material from the program transmission source to the subscriber's television receiver, for occasional periodic display, simultaneously with a transmitted television program, only at those times during presentation of the television program when the video signals are relevant to and enhance the television program presentation.

Post-Hearing: Video signals for occasional periodic display, generated simultaneously with a transmitted television program, only at those times during presentation of the television pro-

gram when the video signals are relevant to and enhance the television program presentation.

Plaintiffs' Harvey I Chart at 1; Defendants' Harvey I Chart at 4-5; Joint Summary at 2-3.

The defendants urge that the "overlay signals" must be video signals, pointing to the specification's reference in the Wall Street Week example to the overlay signals as "graphic video overlays," and a statement by applicants during prosecution of Harvey I that the invention enabled the generation of video signals in response to a control signal. The defendants also urge that the plaintiffs' reliance on the "How To Grow Grass" example in the specification is "completely irrelevant to claims 1 and 4 because the example does not disclose 'a method of communicating television program material,' as required by the claims." The defendants also contend that the "overlay signals" are displayed only periodically, pointing to the specification's description of a computer generated graphic of the viewer's own stocks' performance displayed over the studio generated graphic at certain times during a program. Furthermore, the defendants contend, the applicants, during prosecution, distinguished prior art on the ground that it failed to disclose or suggest transmittal and display of the overlay only during relevant moments of the television program. Defendants' Opening *Markman* Brief at 13-15; *Markman* Tr. at 391:23 to 412:8.

The plaintiffs reply that the "Defendants advocate a complicated definition packed with extraneous limitations allegedly required by the prosecution history." According to the plaintiffs, though, "the statements in the file history * * * constitute a broad description of a preferred embodiment of the invention," and are thus not limiting. The plaintiffs further urge that (1) "the specification is clear that in the preferred embodiment the overlay signal is a *graphic* of the user's personal stock preference," i.e., "the overlay is *onto* the video of the TV program, not that the overlay *is* the video," and (2) "Defendants' contention that the instruct signal be 'in' the TV program, and that it comes from the TV source does not relate at all to the term 'overlay signal.'" [Plaintiffs' emphasis.] Plaintiff's Reply Brief at 3-5.

b) Discussion

This is an instance in which the parties attempt to read too much into a single term or phrase. The term "overlay signal" is not a term of art *per se* and according to the plain language of the claim, the term "overlay signal" simply identifies a particular signal. That is, "overlay" is used to

distinguish "overlay signal" from other signals, e.g., "control signals." The term itself does not define what type of signal it is, or what it does. For example, the claim does not require that the "overlay signal" be a video signal. Any further description of the "overlay signal" is provided by other language in the claim.

That is to say, the express language of the claims in which the disputed term appears explains what an "overlay signal" does. Turning first to the express language of the asserted claims, claim 1 calls for:

1. A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay modification control signals so as to modify the overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a specific user application, comprising the steps of:

transmitting a video signal containing a television program signal * * *

transmitting an instruct-to-overlay signal to said receiver stations * * *

receiving said video signal at a plurality of receivers* * *

detecting the presence of said instruct-to-overlay signal * * *, and

causing said last named computers to generate and transmit their overlay signals to their associated television receivers in response to said instruct-to-overlay signal, thereby to present a display at the selected receiver stations including the television program material and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display specific to a specific user. [All emphasis added.]

Claim 1 thus explains that "overlay signals" are signals (1) generated by a computer associated with a television receiver, (2) transmitted by that computer to the television receiver, and (3) that cause the display of user specific information related to the television program material. Claim 4 expressly calls for the same thing:

4. In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay video signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay control signals [sic] transmitted to their associated receivers, each of said computers being programmed to accommodate a unique user application, the steps of

transmitting a video signal containing a television program signal to said receiver stations, and

transmitting an instruct-to-overlay signal at a time when the corresponding overlay is not being displayed to thereby cause selected ones of said computers to generate and transmit their overlay signals [sic] to their associated television receiver to present a combined display consisting of the television program and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display unique to a specific user. [All emphasis added.]

In sum, the asserted claims as a whole make clear what the "overlay signal" is and what it does. Once again, the word "overlay" is simply being used as a naming convention used to distinguish that signal from other signals in the claims. That the word "overlay" is nominative is evident from the fact that those words may be eliminated, or replaced, for example, with the words "first" or "second," and the claims lose none of their meaning. In other words, Harvey *et al.* simply could have referred to "first signal," "second signal" and so forth, and the meaning and scope of the claims would have been no less clear. In all, the words "overlay" and "overlay video" are nominative only.

As for the defendants' remaining proposed "definition," namely, that the "overlay signals" must be (1) for occasional periodic display, and (2) generated only at those times during presentation of the television program when the video signals are relevant to and enhance the television program presentation, the defendants rely primarily on the prosecution history of Harvey I. In particular, the defendants point to Harvey *et al.*'s statements in their supplemental amendment of August 26, 1985:

By the nature of both Kimura and Baer, once the subscriber manually starts the system, the apparatus transmits overlay signals continuously that are superimposed on the television display. Thus, the contents of shift register 182 in Kimura or raster scan alphanumeric converter 70 in Baer are continuously visible to the subscriber. *** In Kimura and Baer, if the superimposed message stream has any relationship with the television program content whatever, that relationship is continuous. There is no suggestion whatsoever that the overlay may be superimposed only periodically.

By contrast, in applicants' case the overlay is only transmitted and displayed at those particular moments during the television program presentation when it is relevant. At all other times when overlay information might distract or confuse the subscriber rather than enhance the program presentation, no overlay information is displayed at the television receiver even though all apparatus is on.

In the "Wall Street Week" example, the first graphic overlay is not transmitted to the television receiver and displayed until the television program host states, "And here is what your portfolio did." Then under control of the instruct-to-overlay signal, it is transmitted to the television receiver and displayed for a particular brief period after which its transmission and display ceases.

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02057-58. Those remarks, however, were made in the context of the claims as a whole. Other language in the claims may limit the "overlay signals" as the defendants suggest, but the term "overlay signals" *per se* is not so limited.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The plain language of the claim defines the "overlay signal."

3. "overlay modification control signals"

The disputed term appears in claim 1, which is reproduced below for reference, with the disputed term in boldface:

1. A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process **overlay modification control signals** so as to modify the overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a specific user application, comprising the steps of *** *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Control signal" means any signal that purposely affects the operation of a system element or peripheral. ["Overlay modification Control Signals" therefore means] a signal that controls the modification of overlays.

Post-Hearing: [says no construction is needed; but if otherwise, this term means "a signal that controls the modification of overlays."]

DEFENDANTS' PROPOSED CONSTR.

Control signals transmitted from the program transmission source that cause a subscriber computer to modify the overlay signals generated locally by the subscriber computer and transmitted to an associated television receiver for presentation to the user at the subscriber receiver station.

Post-Hearing: Control signals transmitted from the program transmission source that controls the modification of overlays.

Plaintiffs' Harvey I Chart at 1-2; Defendants' Harvey I Chart at 9; Joint Summary at 3.

The defendants urge that their proposed construction, requiring that "overlay modification control signals" be transmitted from the program transmission source, is supported by the intrinsic record disclosure that overlay modification control signals are transmitted to the subscriber stations "in the video program material, *i.e.*, from the program transmission source." The defendants point to the prosecution history of Harvey I, urging that the applicants described their invention as allowing "the content of a television program to be modified for each of a plurality of users by causing the microprocessors at the user locations to generate video signals in response to signals in the transmitted video program." According to the defendants "[a]pplicants explained that unique in-

formation is automatically generated at each subscriber location based on these transmitted control instructions," and "that an overlay modification signal is transmitted to individual computers to modify the unique user specific computer generated overlay signals. The defendants say that the applicant distinguished the prior art by emphasizing control signals in the television program. Defendants' Opening *Markman* Brief at 16-17. At the *Markman* hearing, however, the defendants narrowed the dispute between the parties to whether the "overlay modification control signals" must come from the television program transmission source. *See Markman* Tr. at 424:21 to 425:1 (SPECIAL MASTER PETERSON: "If I and subsequently the court decides one way or the other whether in the context of the claims the overlay modification control signals must in every instance come from the program transmission source, would you be satisfied with that? MR. ALTHERR: Yes.").

The defendants also urge that the terms "overlay control signals" in claim 4, and "modification control signal" in Harvey II, claims 1 and 3, and Harvey III, claim 20, should be construed the same way as "overlay modification control signals." Joint Summary at 3-4. The plaintiffs disagree with respect to both of those two terms. *Id.*

The plaintiffs reply that "[t]he prosecution history excerpts cited by Defendants *** do not support the interpretation that the modification control signal must be remotely-transmitted, nor that it must be contained in the TV program transmission." Some of those passages, the plaintiffs contend, "do not even mention modification control signals," and other of the passages "[do] not refer to the modification control signal as recited in the preamble of the claims in suit, but instead relate specifically to then-pending dependent claims that contain an additional 'step of transmitting an overlay modification signal to the computers.'" Plaintiffs' Reply Brief at 6-7.

b) Discussion

Once again, the parties attempt to read too much into the term "overlay modification control signals." As was the case for "overlay signal," the terms "overlay modification control" are simply nominative terms that distinguish this signal from other signals. The term itself has not been shown to have any meaning in the art apart from the context in which it is used. That is, other lan-

guage in the claim – not the term itself – further defines what this signal does, where it is generated, etc.

Based on the parties' post-*Markman* hearing proposed constructions, the parties apparently agree that the "overlay modification control signals" control the modification of overlays, i.e., there is no dispute over the function of the signals. Indeed, the plain language of the claim defines the function of the signals, i.e., they are processed "so as to modify the overlay signals transmitted to their associated receivers."

Turning to the sole issue of the source of the "overlay modification control signals," claim 1 does not specify where the "overlay modification control signals" come from. Claim 1 actually only uses the disputed term one time, as noted above, in the phrase "and with at least some of said computers being programmed to process overlay modification control signals so as to modify the overlay signals transmitted to their associated receivers." [Emphasis added.] Nothing in the claim requires transmission from the program source, or otherwise excludes transmission from other sources. The defendants' proposed limitation therefore must, if it is to be accepted, find support somewhere else in the intrinsic record.

Turning to the specification, Harvey *et al.* do not use the term "overlay modification control signals" *per se*. Indeed, the specification apparently does not specifically discuss modifying "overlay signals." Rather, the specification, in the "Wall Street Week" example, explains that a microcomputer updates the stock prices of a subscriber's stock portfolio each day so that a subscriber, when viewing "Wall Street Week," may view how their portfolio did that day:

Each weekday, microcomputer, 205, receives, about 4:30 PM, by means of a digital information channel, all closing stock prices applicable that day. It may receive these directly or it may automatically query a data service for them in a predetermined fashion. It records those prices that relate to the stocks in its stored portfolio.

Microcomputer, 205, is preprogrammed to respond in a predetermined fashion to instruction signals embedded in the "Wall Street Week" program[ing] transmission. When the "Wall Street Week" transmission begins at 8:30 PM on a Friday evening, several instruction signals are identified by decoder, 203, and transferred to microcomputer, 205. These signals instruct microcomputer, 205, to generate several graphic video overlays, which microcomputer, 205, has the

means to generate and transmit and TV set, 202, has the means to receive and display, and to transmit these overlays to TV set, 202, upon command. Subsequently in the program, the host says, "Here is what the Dow Jones Industrials did [in] the past week," and a studio generated graphic is pictured. The host then says, "Here is what the broader NASDAQ index did in the week past," and a studio generated graphic overlay is displayed on top of the first graphic. Then the host says, "And here is what your portfolio did." At this point, an instruction signal is generated in the television studio originating the program[m]ing and is transmitted in the program[m]ing transmission. This signal is identified by decoder, 203, and transferred via processor, 204, to microcomputer, 205. This signal instructs microcomputer, 205, to transmit the first overlay to TV set, 202, for as long as it receives the same instruction signal from processor, 204. The viewer then sees a microcomputer generated graphic of his own stocks' performance overlay the studio generated graphic.

Harvey I, col. 19, line 35 to col. 20, line 2. That is, updating stock quotes may be one way to modify an overlay. According to the specification, the microcomputer receives updated stock prices, and "records those prices." Nevertheless, the foregoing portion of the specification does not explain where "overlay modification control signals" come from. More to the point, the specification does not preclude transmission of the disputed signals from a location other than the program source.

Nor does the prosecution history. In prosecuting their application, Harvey *et al.* explained their invention in terms of sending "overlay modification control signals" from the program source, but did not disclaim transmission from other sources. For example, in an amendment of February 7, 1984, Harvey *et al.* urged:

The specific example contained in the specification relates to a television program such as "Wall Street Week" wherein the invention might be used to display the subscriber's investment portfolio at selected times during the normal broadcast. The invention further provides for the possibility of continuously (or selectively) modifying the format or content of the overlay information stored in the microprocessor (or microcomputer) so that, for example, when the narrator causes the "embedded signal" to be broadcast, an updated record of the subscriber's portfolio is automatically displayed at the proper time during the program. [Emphasis added.]

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02016. That clarifies the source of the disputed signals in the "Wall Street Week" embodiment, but does not disclaim other sources.

Continuing with the prosecution history, Harvey *et al.* then explained that their dependent application claims 19, 22 and 25 further called for "the step of transmitting information to the computers to cause the overlay signals to be modified. In this way, for example, the format or content of the overlay signals relating to a user's investment portfolio may be modified so that the information from the computer displayed on the screen remains current and directly relevant to the appearance and content of the television program displayed." *Id.* at PID02017. Those dependent application claims issued as claims 2, 5 and 8, respectively. *See id.* at PID01932. Issued claim 2, for example, calls for:

2. A method according to claim 1, further including the step of transmitting an **overlay modification signal** to the computers which are programmed to process **overlay modification signals**, and causing said last named computers to modify their respective overlay signals in response thereto. [Emphasis added.]

The prosecution history thus suggests that the "overlay modification signals" are the "overlay modification control signals" of claim 1. In claim 1, the "overlay modification control signals" are called for, but not otherwise used. Claim 2, though, as Harvey *et al.* urged during prosecution, does something with those signals – claim 2 further adds the step of transmitting "an overlay modification control signal" to computers programmed to process them, and requires the computers to "modify their respective overlay signals" in response to the "overlay modification control signal." Nevertheless, nothing in claim 2 (or the other dependent claims) requires that the "overlay modification control signals" be transmitted from the program source.

Turning to later prosecution, Harvey *et al.* further discussed the issue of modifying overlay signals when distinguishing their invention over prior art. In their amendment of October 9, 1984, Harvey *et al.* extensively distinguished Bourassin and Crosby, urging, *inter alia*, that:

Applicants' invention enables the program content of a television program to be modified in a unique manner for each of a multiplicity of users (or viewers), by causing microprocessors located at the respective subscriber stations to generate video signals in response to a control signal in the transmitted video program material. In applicants' invention, the overlay video information is specific to the

user and directly related to the video program material. For example, in the case of a program such as "Wall Street Week," the invention may be used to display investment information unique to a subscriber at the subscriber's station and at a precise point in the course of the program at which the specific information of the user relates directly to the transmitted information of more general public interest. As a more specific example, the performance of each user's investment portfolio may be displayed at the user's TV set at a point during the program when each subscriber is asked to compare the performance of his or her own portfolio with measures of the overall performance of the general market.

The Bourasson and Crosby patents have nothing whatever to do with this fundamental concept and no conceivable combination of these references could result in applicants' [sic] invention. [Emphasis added.]

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02031. There, Harvey *et al.* distinguished Bourasson and Crosby on the basis of the respective functions of each control signal, rather than on where the control signal came from. That may be seen, for example, in the way Harvey *et al.* distinguished Crosby:

Accordingly, to further clarify the distinctions between applicants' invention and the prior art, the claims have been amended to state that the overlay signals cause "the display of user specific information related to said program material." Since Bourasson does not even disclose a multiplicity of subscriber stations, obviously he does not suggest the possibility that a single transmitted control signal may cause the display of different overlay signals at the different subscriber stations. Crosby, of course, does not use the embedded signal for the purpose of modifying the visual display and, therefore, clearly cannot suggest the possibility that the control signal may generate user specific overlays at the individual subscriber stations.

[Dependent] Claims 19, 22, 25 and 28 still further distinguish over the cited references in requiring the transmission of an overlay modification signal to the computers (of the receiver stations) in order to modify the user specific display produced by the overlay signal. It seems clear that nowhere in the prior art is there disclosed the concept of modifying a computer generated information signal based on embedded control signals within a main video program. [Emphasis added.]

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02034-35; *see also id.* at PID02050-51 (Amendment of July 12, 1985)(“Although the Examiner has lumped all of applicants' claims together, there are important differences and the dependent claims are patentable in their own right. Specifically, claims 19, 22, 25 and 28 require the transmission of an overlay modification signal to

the individual computers. This enables altering the graphic technique used to represent the underlying date (e.g., a bar chart vs. a pie chart) or otherwise modifying each of the unique user specific computer generated overlay signals and is clearly not suggested in any of the cited references. Indeed, the fundamental concept of using computers or data processing means to generate computer overlay signals is not disclosed in the primary references; therefore, the requirement of independent claims 18, 21 and 24 that at least some of the computers be 'programmed to process overlay modification control signals so as to modify the overlay signals transmitted to their associated receivers' cannot be suggested in the references."). In all, the source of the control signals was never a point of distinction over the prior art, or otherwise emphasized by Harvey *et al.* What is clear is that Harvey *et al.* understood the scope of their claims to include transmission of "overlay modification control signals" from the program source, but did not exclude transmission from other sources. Rather, and again, Harvey *et al.* distinguished their control signals on functional bases. Harvey *et al.* in all events did not clearly and unambiguously disclaim transmission of "overlay modification control signals" from sources other than the program source.

As for whether the term "overlay control signals" in claim 4 should be construed in the same way as "overlay modification control signals," that is discussed below. Also, as for whether "modification control signal" in Harvey II, claims 1 and 3, and Harvey III, claim 20, should be construed the same way as "overlay modification control signals," that is discussed separately below, as well.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The plain language of the claims defines the "overlay modification control signals." The "overlay modification control signals" are not limited to signals transmitted from the program source.

4. "specific user application"

The disputed term appears in claim 1 as follows (the disputed term is in boldface):

1. A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay modification control signals so as to modify the overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a **specific user application**, comprising the steps of: * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

A computer program that relates to, or that is used or selected by, a particular user of that receiver station.

DEFENDANTS' PROPOSED CONSTR.

A computer program (software) adapted to a particular purpose for a particular user at the subscriber receiver station.

Post-Hearing: [no change]

Post-Hearing: [no change]

Plaintiffs' Harvey I Chart at 2; and Defendants' Harvey I Chart at 10; Joint Summary at 4.

The defendants contend that the dispute concerns "whether the application, which the parties agree is a computer program, must be adapted to a particular purpose for a particular user at the subscriber receiver station." The defendants urge that the plaintiffs' contention that "any computer program that relates to or is used or selected by a particular user is a 'specific user application,'" "directly contradicts the plain meaning of 'specific user' and impermissibly reads those words out of the claim." According to the defendants, "just because a generic computer program may be used or selected by a particular user does not make that generic program 'user specific.'" [Defendants' emphasis.] Defendants' Opening *Markman* Brief at 18.

The plaintiffs do not address this term in their *Markman* brief.

The parties agree that the terms "unique user application" in claim 4, "special user application" in Harvey II, claims 1 and 3, and Harvey III, claims 20, 24 and 25, should be construed in the same way as "specific user application." Joint Summary at 4 n.8.

b) Discussion

There is no dispute that the "specific user application" refers to a computer program or software. The issue seems to be whether the "specific user application" must be (1) for a particular user, *i.e.*, a non-generic program, and (2) adapted to a particular purpose. *See Markman Tr.* at 428:23-25 ("So basically, we have two, two requirements that we have for this specific user application. It's for a particular user, it's adapted to a particular purpose."). Colloquy between the special master and the defendants clarified the dispute:

SPECIAL MASTER PETERSON: I'm sorry, let me just make sure, the claim language, the claim language refers to a specific user application, and you say adapted to a particular purpose for a particular user and you said what was separating you all was they said this could be a generic application.

MR. ALTHERR: As I understand their position is that it can be a generic computer application program so that it would apply to a bunch of different receiver stations, and it would not be to the particular purpose for as opposed to just a generic program.

SPECIAL MASTER PETERSON: All right. Again, I'm not really sure what that means. I'm not -- either I'm not sure what that means on either side of the case. Suppose I have Microsoft Word, that's something everybody has, right?

MR. ALTHERR: That's correct.

SPECIAL MASTER PETERSON: Or many people.

MR. ALTHERR: That would be correct.

SPECIAL MASTER PETERSON: All right. Would you consider that to be a specific user application?

MR. ALTHERR: No, we would not.

SPECIAL MASTER PETERSON: All right. If I was typing up the report and recommendation in this cause using Microsoft Word, would you consider that to be a specific user application?

MR. ALTHERR: No, it was something that tied into, like in this particular case, the individual's own stock performance, okay, and it was one for analyzing for a particular purpose related to stocks for that individual.

SPECIAL MASTER PETERSON: Well, I guess that's kind of my point: The program itself could be generic for a number of people but the data would be for a specific individual; is that what you're saying?

MR. ALTHERR: Yes, but it also has to be adapted to a particular purpose. Like I said, in this case, as in cases like I said in the Wall Street Week example that they give here with the stock portfolio, that it will put up as you indicate for each subscriber who has it a graphic, but it will be a different graphic for each one, it will be a different -- different regarding what the extent of the portfolio is that is in there.

SPECIAL MASTER PETERSON: So you're saying the programming itself has to be specific for each individual and in my Microsoft Word example, the only way that would be a specific user application is if I hired someone to come in and redo Microsoft Word specifically for me?

MR. ALTHERR: That would be correct.

Markman Tr. at 426:11 to 428:6.

Claim 1 requires that "each of said computers be[] programmed to accommodate a specific user application." That is the sole mention of the disputed term in that claim. The claim does not otherwise describe the "specific user application," nor does it otherwise require the "specific user application" to be customized, although the claim does, again, require that the computers be "programmed to accomodate" the specific user application. Thus, the focus turns to determining the customary meaning of the disputed term.

According to dictionary definitions provided by the defendants, the word "specific" means "intended for or restricted to a particular end or object" or "something peculiarly adapted to its purpose, use, or situation." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 2351 (1981). "User" is defined as "anyone requiring the services of a computer system." DICTIONARY OF DATA PROCESSING 195 (2d ed. 1981). The defendants appear to rely on the second definition of "specific" to support their position. However, it is clear from the intrinsic record that Harvey *et al.* intended the claim to be interpreted under the broader first definition, rather than the second. "Because words often have multiple dictionary definitions, some having no relation to the claimed invention, the intrinsic record must always be consulted to identify which of the different possible dic-

tionary meanings of the claim terms in issue is most consistent with the use of the words by the inventor." *Texas Digital*, 308 F.3d at 1203.

Turning to the intrinsic record, then, Harvey *et al.* nowhere used the disputed term *per se* in the specification. Rather, in connection with the "Wall Street Week" example, they explained that:

Microcomputer, 205, is preprogram[m]ed to respond in a predetermined fashion to instruction signals embedded in the "Wall Street Week" program[m]ing transmission. When the "Wall Street Week" transmission begins at 8:30 PM on a Friday evening, several instruction signals are identified by decoder, 203, and transferred to microcomputer, 205. These signals instruct microcomputer, 205, to generate several graphic video overlays, *** Then the host says, "And here is what your portfolio did." At this point, an instruction signal is generated in the television studio originating the program[m]ing and is transmitted in the program[m]ing transmission. This signal is identified by decoder, 203, and transferred via processor, 204, to microcomputer, 205. This signal instructs microcomputer, 205, to transmit the first overlay to TV set, 202, for as long as it receives the same instruction signal from processor, 204. The viewer then sees a microcomputer generated graphic of his own stocks' performance overlay the studio generated graphic. [Emphasis added.]

Harvey I, col. 19, line 42 to col. 20, line 2. That is generally what the claim requires, *i.e.*, that the computers be "programmed," but all told, Harvey *et al.* did not, in the specification, describe or otherwise require that the recited "specific user application" be any particular type of program, whether generic or not. The foregoing excerpt does, though, suggest that the microcomputer, so programmed, outputs signals specific to a user. To continue the analogy used during the *Markman* hearing, the "specific user application" may apparently be Microsoft® Word either out-of-the-box, *i.e.*, generic, or customized. However, it is clear from the foregoing that Harvey *et al.* used the words "specific user" to connote the intended use, purpose or result of that programming or "application," namely, to provide a subscriber with information specific to that subscriber. The purpose is that the subscriber sees information specific to him or her, and that is what the "specific user application" is for.

The prosecution history is in accord. For example, in their second amendment (October 9, 1984), Harvey *et al.* distinguished Bourasson and Crosby by urging that:

Furthermore, as indicated above, an important feature of applicants' invention is that each of the microprocessors or computers are programmed to generate overlay signals which are specifically related to the user or subscriber as well as to the program material broadcast to the entire community. Thus, in applicants' invention, when the embedded control signal causes the investment portfolios (for example) to appear on the screen, the displayed portfolio at each subscriber station will represent the portfolio specific to that subscriber. This concept of generating user specific information is not considered in Crosby and Bourasson. [Emphasis added.]

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02034. Clearly, what is "specific" about a "specific user application" is that it generates "overlay signals which are specifically related to the user or subscriber."

Harvey *et al.*'s later amendments to application claim 18 (which, again, issued as claim 1), and their remarks concerning those amendments clarify and emphasize that. The disputed term was originally recited as "particular user application." See Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02011 (Amendment of February 7, 1984). Over the course of prosecuting their application to issuance, Harvey *et al.* amended "particular user application" to "unique user application," *see id.* at PID02040 (Amendment of July 12, 1985), before amending to "specific user application." *See id.* at PID02108 (Amendment of March 6, 1987). Harvey *et al.* did not expressly explain that particular series of amendments, but indirectly explained the reason therefor when explaining why they added the phrase "the overlays displayed at a multiplicity of said receiver stations being different, with each display unique to a specific user" to the claims. Specifically, in first amending the disputed term to "unique user information," Harvey *et al.* distinguished the prior art references Kimura and Baer thus:

In applicants' view, the claims as amended on October 4, 1984 distinguish over the primary references ***. "User specific information" means information which is unique to a user. This is completely unlike Kimura and Baer where the overlay signals are transmitted to all users and there is no user specific information. However, in order to avoid any question, applicant has further amended the independent claims to state that the overlays displayed at a multiplicity of the receiver stations are different and unique to a specific user. Since the claims al-

ready require that the computer generate "user specific information related to said program material," it is clear that the claims expressly require that each of a multiplicity of receivers have the ability to generate video overlay information which is unique to that receiver and which is related to the program content. In both Kimura and Baer, there are relatively few overlay signals and none of the overlay signals is unique to the individual receivers (in many cases, the overlay signals are also not related to the program content). [Emphasis in original.]

Id. at PID02048. That is, Harvey *et al.* explained that the goal of the amendments was to make clear that each subscriber saw information specific to that subscriber. Then, in amending "unique user application" to "specific user application," Harvey *et al.* urged that their amendment was "not intended to affect the scope of the claims but upon review of the application, [because?] it was realized that the term 'unique' may convey the thought that the invention requires that the display at each of the subscribers must necessarily be different. Although, in the example given, this is typically the case since it is highly unlikely that any two subscribers would have the same stock portfolio, it would appear to be self-evident that the invention would nevertheless apply to a situation where some number of subscribers had exactly the same portfolio. In that case, the user specific information displayed at the subscriber's television receiver would be the same for each of such subscribers. In that sense, arguably the information might not be "unique" although it would still be 'specific.' " Harvey *et al.* added that they believed "that the Examiner will have no objection to this proposed change since clearly the invention is concerned with the display of user specific information as opposed to the display of 'unique' information. In that sense, the proposed amendments may actually avoid a possible inconsistency." *Id.* at PID02109-10. Thus, again, the intrinsic evidence makes clear that Harvey *et al.* used the word "specific" to connote the intended use, purpose or result of the "specific user application," namely, to provide a subscriber with information specific to that subscriber. Altogether, then, the defendants' proposed construction does not properly account for the prosecution history. Again, the claim requires that the computers "be[] programmed to accommodate a specific user application," but that does not necessarily require that the "specific user application" itself be customized or for a particular user.

However, by that same standard, the plaintiffs' proposed construction does not do so, either. The called-for "specific user application" does not, of course, have to be any particular kind of program. But Harvey *et al.* do not appear to have used the word "specific" to mean what the plaintiffs

say, namely, that the application simply relates to, or may be used or selected by a particular user. Rather, it is clear that Harvey *et al.* used the word "specific" to connote a particular intended use, purpose or output of the "specific user application."

As for the parties' agreement that the term "unique user application" in claim 4 should be construed in the same fashion, the special master agrees. Claim 4 calls for, in pertinent part:

4. In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay video signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay control signals [*sic*] transmitted to their associated receivers, each of said computers being programmed to accommodate a **unique user application**, the steps of: ***
[Boldface added.]

Prior to issuance, claim 4 was application claim 21. *See id.* at PID01932. As discussed above, according to the amendment of March 6, 1987, Harvey *et al.* changed the word "unique" in application claim 21 to "specific," and extensively explained their reason for doing so. *See id.* at PID02108. For some unknown reason, that change is not reflected in claim 21 (patent claim 4) as issued. There is no dispute that "unique user application" should be construed in the same way as "specific user application." Furthermore, Harvey *et al.* made clear in the intrinsic evidence that "unique user application" as called for in claim 4 meant the same thing as "special user application" in claim 1. Thus, the special master agrees with the parties that "unique" means "specific." *See Novo Industries, L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed. Cir. 2003) ("A district court can correct a patent only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims.").

Finally, as for the parties' agreement that the terms "special user application" in Harvey II, claims 1 and 3 (discussed separately below), and Harvey III, claims 20, 24 and 25, should be construed in the same way as "specific user application," the special master agrees.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

"Specific user application" means a computer program that provides user-specific information.

5. "transmitting a video signal containing a television program signal"

The disputed phrase appears in claim 1, with the disputed phrase and other terms pertinent to the parties' dispute in boldface:

1. A method of **communicating television program material** to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay signals to their associated television receivers, said overlay signals causing the display of user specific information related to **said program material**, ***, comprising the steps of:

transmitting a video signal containing a television program signal to said receivers,

transmitting an instruct-to-overlay signal to said receiver stations ***,

receiving said video signal at a plurality of receiver stations and displaying said program material on the video receivers of selected ones of said plurality of receiver stations;

detecting the presence of said instruct-to-overlay signal ***, and

causing said last named computers to generate and transmit their overlay signals to their associated television receivers in response to said instruct-to-overlay signal, thereby to present a display at the selected receiver stations including **the television program material** and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display specific to a specific user.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

Transmission of a signal including a television program [contend that no construction is necessary]

DEFENDANTS' PROPOSED CONSTR.

Post-Hearing: [no change]

Post-Hearing: The term "television program signal" should be construed consistently with "television program material" in [Harvey I] claim 1. "Video signal" should be construed to mean "a signal containing information that represents a visually perceptible presentation, such as graphics, images or text."

Plaintiffs' Harvey I Chart at 6; Defendants' Harvey I Chart at 13; Joint Summary at 59.

The parties did not address this term in their respective *Markman* briefs.

b) Discussion

Turning first to "video signal," and beginning as always with the language of the claim, the first question is whether "video signal" has a recognized meaning to one of ordinary skill in the art. The McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS (5th ed. 1994), at 2134, defines "video signal" in the field of communications as "[i]n television, the signal containing all of the visual information together with blanking and synchronizing pulses." *See also* MODERN DICTIONARY OF ELECTRONICS 831 (7th ed. 1999)(“1. The picture signal in a television system – generally applied to the signal itself and the required synchronizing and equalizing pulses. 2. In television, the signal that conveys all of the intelligence present in the image, together with the necessary synchronizing and equalizing pulses. 3. That portion of the composite video signal that varies in gray-scale levels between reference white and reference black. Also referred to as the picture signal, this is the portion that can be seen. 4. The picture signal. A signal containing visual information and horizontal and vertical blanking. *See also* composite video signal. 5. The output from a video graphics adapter incorporating the red (R), green (G), and blue (B) signals and the luminance signal, or a combination of those signals, that pass to the video input of a monitor.”). Although the term is not used *per se* in the specification, that meaning comports with Harvey *et al.*'s discussion of the video portion of television transmissions. *See, e.g.*, Harvey I, col. 4, lines 18-22 (“In television [the embedded signals] may appear on one line in the video portion of the transmission, or on a portion of one

line, or on more than one line, and will probably lie outside the range of the television picture displayed on a normally tuned television set.") The parties' submissions do not indicate that one of ordinary skill in the art would have a different understanding of "video signal."

As for "television program signal," in the context of claim 1, the "television program signal" carries "television program material," i.e., television program content. In view of the above discussion regarding "television program material" no further "construction" is necessary. Moreover, the term "television program" is widely and commonly used, and the specification indicates that the term is used in its normal colloquial form. *See, e.g.*, Harvey I, col. 19, lines 5-8 ("In another example, microcomputer, 205 may be preinformed that a certain television program, hypothetically 'Wall Street Week,' should be televised on TV set, 202, when it is cablecast.") and col. 20, lines 16-19 ("Suppose a viewer watches a television program on cooking techniques that is received on TV set, 202, via box, 201. Julia Child's 'The French Chef' is one such program.").

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

In the phrase "transmitting a video signal containing a television program signal," a "video signal" is, in television, the signal containing all of the visual information together with blanking and synchronizing pulses. The "television program signal" carries television program content.

6. "instruct-to-overlay signal"

The disputed term appears in both asserted claims 1 and 4. Claim 1 is representative (the disputed term is in boldface):

1. A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, * * *, comprising the steps of:

transmitting a video signal containing a television program signal * * *,

transmitting an **instruct-to-overlay signal** to said receiver stations at a time when the corresponding overlay is not being displayed,

receiving said video signal at a plurality of receiver stations * * *,

detecting the presence of said **instruct-to-overlay signal** at said selected receiver stations and coupling said **instruct-to-overlay signal** to the computers associated with the video receivers of said selected stations, and

causing said last named computers to generate and transmit their overlay signals to their associated television receivers in response to said **instruct-to-overlay signal**, thereby to present a display at the selected receiver stations including the television program material and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display specific to a specific user.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

A signal, from a source at a location other than the receiver station, that instructs a computer to generate and transmit an overlay signal to an associated receiver.

Post-Hearing: [no change, but primarily urges that this term does not need construction]

DEFENDANTS' PROPOSED CONSTR.

The term "instruct-to-overlay signal" means a control signal transmitted from the program transmission source that causes a subscriber computer to locally generate and transmit an overlay signal to its associated television receiver for occasional periodic display, simultaneously with a transmitted television program, only at those times during presentation of the television program when the overlay signal is relevant to and enhances the television program presentation.

Post-Hearing: [A] control signal transmitted from the program transmission source that instructs subscriber computers to simultaneously generate and transmit an overlay signal to their associated receivers.

Plaintiffs' Harvey I Chart at 7-8; Defendants' Harvey I Chart at 14; Joint Summary at 4-5.

The defendants contend that the "instruct-to-overlay signal" is transmitted from the program transmission source and causes overlay signals to be displayed only when the video signals are relevant to and enhance the television presentation – a construction that the defendants say is required by the intrinsic evidence regarding "overlay signals." Defendants' Opening *Markman* Brief at

19. The defendants' post-hearing construction does not, however, include the "relevant to and enhance" limitations.

The plaintiffs do not address this term in their *Markman* brief.

b) Discussion

Once again, the parties attempt to read too much into "instruct-to-overlay signal." The term has not been found in any technical references provided by the parties or on independent review. Thus, the term does not appear to be a term of art that would be recognized by one of ordinary skill in the art outside the context of the claims. In the context of the claims, "instruct-to-overlay" simply distinguishes this signal from other signals, *i.e.*, that phrase is nominative.

The foregoing proposed constructions indicate that the defendants primarily seek to limit the term "instruct-to-overlay signal" to one transmitted from the program transmission source. The plain language of the claims, however, is not so limited. Claims 1 and 4 call for "transmitting an instruct-to-overlay signal to said receiver stations," but do not otherwise limit where that signal is transmitted from. Certainly, there is nothing in those claims to exclude transmission from sources other than the program source. Furthermore, claims 3 and 6, which depend from claims 1 and 4, respectively, call for the disputed signals to be "embedded in said video signals outside the range of the television picture," and, assuming that the embedding is done at the program source, thus specify where those signals originate. But that is not a limitation of independent claims 1 and 4. Dependent claims, of course, may aid in interpreting the scope of the claims from which they depend, *see Laitram Corp. v. NEC Corp.*, 62 F.3d 1388, 1392 (Fed. Cir. 1995), because the court should "not interpret an independent claim in a way that is inconsistent with a claim which depends from it." *Wright Med. Tech., Inc. v. Osteonics Corp.*, 122 F.3d 1440, 1445 (Fed. Cir. 1997). Although the defendants do not urge that the disputed signals must be "embedded in said video signals," the doctrine of claim differentiation suggests, of course, that the "instruct-to-overlay signal" of claims 1 and 4 do not have to be embedded in the video signal, *see RF Del., Inc. v. Pacific Keystone Techs., Inc.*, 326 F.3d 1255, 1263 (Fed. Cir. 2003) ("Although claim differentiation is not a 'hard and fast rule of construction,' it is applicable where 'there is a dispute over whether a limitation found in a dependent claim should be read into an independent claim, and that limitation is the only meaningful difference be-

tween the two claims.’ ”). Thus, the limitations contained in those dependent claim suggests that the “instruct-to-overlay signal” of claims 1 and 4 may be transmitted from a source other than the program source.

The specification, in the now-familiar “Wall Street Week” example, although not using the term “instruct-to-overlay signal” *per se*, explains that “instruction signals” are transmitted from the program source:

Microcomputer, 205, is preprogram[m]ed to respond in a predetermined fashion to instruction signals embedded in the “Wall Street Week” program[m]ing transmission. When the “Wall Street Week” transmission begins at 8:30 PM on a Friday evening, several instruction signals are identified by decoder, 203, and transferred to microcomputer, 205. These signals instruct microcomputer, 205, to generate several graphic video overlays, which microcomputer, 205, has the means to generate and transmit and TV set, 202, has the means to receive and display, and to transmit these overlays to TV set, 202, upon command. Subsequently in the program, the host says, “Here is what the Dow Jones Industrials did [in] the past week,” and a studio generated graphic is pictured. The host then says, “Here is what the broader NASDAQ index did in the week past,” and a studio generated graphic overlay is displayed on top of the first graphic. Then the host says, “And here is what your portfolio did.” At this point, an instruction signal is generated in the television studio originating the program[m]ing and is transmitted in the program[m]ing transmission. This signal is identified by decoder, 203, and transferred via processor, 204, to microcomputer, 205. This signal instructs microcomputer, 205, to transmit the first overlay to TV set, 202, for as long as it receives the same instruction signal from processor, 204. The viewer then sees a microcomputer generated graphic of his own stocks’ performance overlay the studio generated graphic. When the two studio generated graphics are no longer displayed, the studio stops sending the instruction signal, and the microcomputer, 205, ceases transmitting its own graphic to TV set, 202, and prepares to send the next locally generated graphic overlay upon instruction from the originating studio. [Emphasis added.]

Harvey I, col. 19, line 42 to col. 20, line 7. In that embodiment, the “instruction signal” is, as noted previously, transmitted from the program source. However, it is well settled that the claims are not necessarily limited to the disclosed embodiment, even if “instruction signals” are the same as “instruct-to-overlay signals.” See *Teleflex*, 299 F.3d at 1327. In this case, the specification does not indicate that the “instruct-to-overlay signal” must be transmitted from the program source.

The prosecution history provides further support for that construction. For example, during prosecution, Harvey *et al.* conceded that "Crosby does disclose the use of an 'embedded signal' accompanying television broadcast program material," but did not distinguish Crosby on the basis of the source of the "instruct-to-overlay signal." *See Plaintiffs' Opening Markman Brief*, Apx. F (Vol. 3 of 7) at PID02017 (Amendment of February 7, 1984). Rather, Harvey *et al.* argued that "in Crosby, such information is used solely for the purpose of confirming that certain program material (typically advertising) has been received. There is no suggestion in Crosby that this embedded signal can be used for the purpose of coupling a stored overlay video signal (which may be continuously updated) to the receiver at selected moments in the course of the program." *Id.* at PID02017-18. In all, Harvey *et al.* did not disclaim non-studio or non-program source sources, nor, for that matter, did Harvey *et al.* even discuss other sources when distinguishing Crosby and the other prior art, e.g., Bourassin, Kimura and Baer.

Furthermore, in their last substantive amendment of the Harvey I prosecution, Harvey *et al.* urged that "the instruct-to-overlay signal need not be included in the transmitted television signal." In the first amendment after allowance, Harvey *et al.* urged that the "instruct-to-overlay signals" did not have to be embedded in the television program material (explaining their amendment to application claim 21 deleting the requirement for embedding the "instruct-to-overlay signal" in the television program material):

Claim 18 which is directed to a method of communicating television program material does not require that the instruct-to-overlay signal be embedded in the television program material. Likewise, claim 24 which is directed to the receiving process does not require that the instruct-to-overlay signal be embedded in the program. However, claim 21 which is directed to the transmitting portion of the process states that the instruct-to-overlay signal is "selectively embedded in said television program signal." Applicants respectfully submit that in the broad context of the invention, and consistent with claims 18 and 24, it is not necessary that the instruct-to-overlay signal be an embedded signal. At no time has patentability of claim 18 been predicated on the fact that the instruct-to-overlay signal is an embedded signal, and applicants have recognized that the concept of embedding a control signal in a television signal is shown in the prior art.

Since claims 18 and 24 have been allowed, it is apparent that the Examiner also did not regard applicants' broad invention as residing in the concept of embedding a control signal in the program material. Furthermore, it is obvious that no

further searching is required since claims which do not call for an embedded signal have been searched and found allowable. [Emphasis added.]

Id. at PID02064-65 (First Amendment After Allowance). As discussed above, the examiner eventually re-opened prosecution of application claims 20, 23 and 27, and challenged Harvey *et al.*'s § 112(1) support for those claims. Harvey *et al.* responded to the examiner's § 112(1) rejection, and also added additional comments that do not appear to have been related to that basis of rejection. Those additional comments concerned an amendment to application claim 18 (which, again, issued as claim 1) changing "receivers" to "--receiver stations--." According to Harvey *et al.*, that amendment was made to conform claim 18 with remarks made in their First Amendment After Allowance (excerpted above):

Applicants have also amended claim 18, line 16 to change "receivers" to -- receiver stations--. This change is also not intended to affect the scope of the claim but, upon review of this allowed claim, it was thought that the term "receivers" may suggest that the instruct-to-overlay signal must be received by a television receiver. Consistent with the comments presented in Paragraph 2 of the Remarks submitted in applicants' Amendment Under 37 C.F.R. 1.312 on December 3, 1985, it is applicants' intention to make clear that the instruct-to-overlay signal need not be included in the transmitted television signal. [Emphasis added.]

Id. at PID02110 (Post-Withdrawal Amendment). Thereafter the examiner issued a second Notice of Allowability without comment. Thus, Harvey *et al.* ended prosecution with a clear statement that the "instruct-to-overlay signal" did not have to be "in" the transmitted television signal. Harvey *et al.*'s disassociation of the "instruct-to-overlay signal" and the television program material, albeit somewhat indirectly, seems to support a construction that does not limit the term beyond what is otherwise required by the claim language. In all, the prosecution history is devoid of any statements by Harvey *et al.* that could be reasonably viewed as clearly and unambiguously disclaiming sources other than the program source.

Finally, the defendants propose that the disputed signals instruct "subscriber computers to simultaneously generate and transmit an overlay signal to their associated receivers." Simultaneous generation and transmission of the overlay signal is not required by the language of the claims.

During prosecution of Harvey I, Harvey *et al.* noted that simultaneous generation and output was possible, but Harvey *et al.* did not say that was required:

Applicants show (1) a conventional television transmission and (2) a fully integrated system of many computers operating at once to process locally recorded data under control of a common set of control instructions input to all computers simultaneously at a single input source. This system generates unique user specific information at each subscriber station. Then upon instruction it automatically outputs this information to a multiplicity of television receivers (each of which is at a specific subscriber station) thereby generating distributed user specific combined television information and displaying it to a large audience. At each subscriber station, this system displays user specific information that is private and unique to the subscriber and is neither known at the input source nor revealed at any other subscriber station. In accordance with the invention, it is possible for each subscriber automatically and simultaneously to combine with the program content in a unique way. This is not possible in any of the cited references nor in the proposed combination of references. [Harvey *et al.*'s underlining.]

Amendment of July 12, 1985 at PID02044-45. Nevertheless, during later prosecution of Harvey II (discussed in more detail below), which issued on a continuation of the application maturing into Harvey I, Harvey *et al.* urged that the computers must all process and output their signals at the same time:

As explained above, in applicants' invention, each of a multiplicity of computers is controlled by instructions from one central control site and caused to generate and transmit information specific to a single user coordinated with the program material from the central site. This means that each of a multiplicity of separate jobs must be processed simultaneously and, in effect, outputted simultaneously to a multiplicity of subscribers. [Emphasis added.]

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01686. See *Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004) ("[E]ven though the '649 patent had already issued, we think that it is not unsound to apply the same interpretation *** and will not construe the scope of the '649 patent's claims more broadly than the patentee itself clearly envisioned. We also reject

[the argument] that the statements made during prosecution of the [later] '627 patent should not be applied to the '649 patent because the examiner could not have relied on those statements in allowing the claims of the '649 patent." (citing *Georgia-Pacific Corp. v. United States Gypsum Co.*, 195 F.3d 1322 (Fed. Cir. 1999)). That is, in the language of the claim, a single signal, namely, the "instruct-to-overlay signal," causes the "computers to generate and transmit their overlay signals to their associated television receivers." Harvey *et al.* thus argued that a single signal controlling the computers meant that the computers "must" act simultaneously, *i.e.*, the computers generated and transmitted the information simultaneously.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The plain language of the claims defines the "instruct-to-overlay signal." The "instruct-to-overlay signal" is not limited to a signal transmitted from the program source. In light of arguments made during prosecution, the claims require that the "instruct-to-overlay signal" cause the computers simultaneously to generate and transmit their user specific signals to their associated output device.

7. "selected ones of said plurality of receiver stations"

This term appears in claim 1, as follows (the disputed term is in boldface):

1. A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay signals to their associated television receivers, *** comprising the steps of:

transmitting a video signal containing a television program signal to said receivers,

***,

receiving said video signal at a plurality of receiver stations and displaying said program material on the video receivers of **selected ones of said plurality of receiver stations**, ***

detecting the presence of said instruct-to-overlay signal at **said selected receiver stations** and coupling said instruct-to-overlay signal to the computers associated with the video receivers of **said selected stations**, and

causing said last named computers to generate and transmit their overlay signals to their associated television receivers in response to said instruct-to-overlay signal, thereby to present a display at **the selected receiver stations** including the television program material and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display specific to a specific user.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

Receiver stations that meet a particular criteria, such as the receiver stations being tuned in, turned on, enabled, or authorized to view the programming.

DEFENDANTS' PROPOSED CONSTR.

Receiver stations addressably chosen by the program transmission source.

Post-Hearing: The term requires no construction.

Post-Hearing: [no change]

Plaintiffs' Harvey I Chart at 9; Defendants' Harvey I Chart at 16; Joint Summary at 58.

The parties apparently agree that the term "selected receiver stations" in Harvey II, claims 1 and 3, and in Harvey III, claims 20 and 25, should be given the same construction as "selected ones of said plurality of receiver stations." *See* Joint Summary at 58 n.76.

The parties do not otherwise address this term in their respective *Markman* briefs.

b) Discussion

The dispute – if there is one – appears to be whether the "selected ones of said plurality of receiver stations" requires some selection criterion. The term "selected," though, simply means chosen from a group. *See, e.g.*, WEBSTER'S THIRD NEW INT'L DICTIONARY 2058 (1981). In general terms, the act of choosing may involve some selection criterion, but that is not necessarily a requirement imposed by "selected" *per se*.

Claim 1 simply calls for "receiving said video signal at a plurality of receiver stations and displaying said program material on the video receivers of selected ones of said plurality of receiver stations." That is, while the video signal is received by "a plurality of receiver stations," the program

carried in the video signal is only displayed on "selected ones" of those "plurality of receiver stations." The claim does not expressly provide any selection criteria, or otherwise restrict the selection criteria. Nor does the intrinsic evidence require certain selection criteria. The plaintiffs point to several sections of the specification that describe operation of an embodiment of Harvey *et al.*'s invention in support of their construction, but those are simply examples, not limitations.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The term "selected ones of said plurality of receiver stations" refers to receiver stations that are chosen to display the program material. The claim does not require any particular selection criterion.

8. "overlay control signals"

That term appears in claim 4, which is reproduced below for reference with the disputed term in boldface:

4. In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay video signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process **overlay control signals [sic]** transmitted to their associated receivers, each of said computers being programmed to accommodate a unique user application, the steps of

transmitting a video signal containing a television program signal * * *, and

transmitting an instruct-to-overlay signal * * * to thereby cause selected ones of said computers to generate and transmit their overlay signals [sic] to their associated television receiver * * *.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

DEFENDANTS' PROPOSED CONSTR.

A control signal that controls the recording, processing, generation, transmission or interpretation of a program signal from a program source that cause a subscriber

tation of overlays.

Post-Hearing: [says no construction necessary, but otherwise same as above]

computer to modify the overlay video signals generated locally by the subscriber computer and transmitted to an associated television receiver for presentation to the user at the subscriber receiver station.

Post-Hearing: [S-A proposes two constructions:] [1] control signals transmitted from the program transmission source that cause a subscriber computer to modify the overlay video signals; [2] this term should be construed the same as "overlay modification control signal."

Plaintiffs' Harvey I Chart at 12-13; Defendants' Harvey I Chart at 20; Joint Summary at 5 and 60.

The defendants contend that "overlay control signals" should be construed in the same way as "overlay modification control signals" in claim 1. Defendants' Opening *Markman* Brief at 21. Despite two slightly different proposed constructions, that appears to be the defendants' position.

The plaintiffs, on the other hand, say that the disputed term is a control signal, and is thus not limited to modification of overlays. Joint Summary at 5.

b) Discussion

The phrase "overlay control signals" *per se*, insofar as is evident from the parties' submissions, is not a defined term or phrase of art, or a term or phrase that would have meaning to one of ordinary skill in the art apart from the context of the claims taken in conjunction with the specification and prosecution history. That is, available technical references and resources do not define "overlay control signals" *per se*. However, the Federal Circuit has noted that individual terms in a phrase may have accepted meanings in the art, which may provide guidance on how one of ordinary skill would construe a phrase. *See, e.g., Altiris*, 318 F.3d at 1372 ("The [district] court committed two errors here. First, simply because a phrase as a whole lacks a common meaning does not compel a court to abandon its quest for a common meaning and disregard the established meanings of the individual words. *** Second, also as noted above, merely because the specification only describes one embodiment is not a sufficient reason to limit the claims to that embodiment.").

In one sense, in the phrase "overlay control signals," the phrase "overlay control" is being used nominatively to identify the signal. Here, however, the plain language of the claim in which "overlay control signals" appears does not expressly define the signal. That is unlike the situation for the other similar terms at issue here, such as "overlay signals," "overlay modification control signals," and "modification control signals," in which the plain language of their respective claims expressly defined the signals, at least in functional terms. Here, therefore, it seems that the words "overlay control" must be accorded some descriptive weight. *See, e.g., Altiris*, 318 F.3d at 1372 (in the term "boot selection flag," "boot" and "selection" "quite clearly are descriptive modifiers of 'flag,' a term that does have a common meaning in the art."). In short, the context in which "overlay control signals" is used in the preamble, and the general connotation of "control signals," seems most clearly to convey that at least some of the computers have been programmed to process signals that control or modify the overlays.

In the context of the claims, the words "overlay," "control" and "signals" suggest that these are signals that control overlays. And that is also the connotation suggested by the context in which "overlay control signals" is used in the claim. Once again, claim 4 calls for:

4. In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay video signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay control signals [sic] transmitted to their associated receivers, each of said computers being programmed to accommodate a unique user application, the steps of

transmitting a video signal containing a television program signal to said receiver stations, and

transmitting an instruct-to-overlay signal at a time when the corresponding overlay is not being displayed to thereby cause selected ones of said computers to generate and transmit their overlay signals to their associated television receiver to present a combined display consisting of the television program and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display unique to a specific user.

The preamble thus first sets out the environment of the claimed method, *i.e.*, “[i]n a method of communicating television program material to a multiplicity of receiver stations;” in which each of the receiver stations “includes a television receiver and computer.” The preamble next explains that the computers are adapted to generate and transmit overlay signals to their associated television receivers.” The preamble then further defines the “overlay video signals,” namely, the overlay video signals (“said signals”) “caus[e] the display of user specific information related to said program material.” One commonly understood meaning of an “overlay” is “a transparent sheet comprising graphic matter to be superimposed on another sheet.” MERRIAM-WEBSTER’S COLLEGiate DICTIONARY 829 (10th ed. 1999). In the present context, of course, the “overlay” is electronic, *i.e.*, “overlay video signals” that “caus[e] the display of user specific information related to said program material.”

The preamble then further provides that “at least some of said computers” are “programmed to process overlay control signals [*sic*, “signals”] transmitted to their associated receivers.” In the field of computer science, a “control signal” has been defined as “[a] set of pulses used to identify the channels to be followed by transferred data,” McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS 454 (5th ed. 1994), which does not seem relevant in this context. The term “control signal” has also been defined in the field of control systems as “[t]he signal applied to the device that makes corrective changes in a controlled process or machine.” *Id.* The term “control signal” has further been defined as “[a] pulse or frequency of electricity or light that represents a control command as it travels over a network, a computer channel or wireless.” TECHENCYCLOPEDIA.¹⁸

In general terms, a “control signal” would thus appear to be understood as precisely that – a signal that provides a control function of some kind, including one that may make changes or modifications in a process. And, once again in a general sense, that seems to be consistent with how the specification broadly refers to “control signals,” albeit in a different environment, *e.g.*, “[c]ontrol signals can be passed to the apparatus by means of the program[m]ing transmission input at switch, 1,

¹⁸ <http://www.techweb.com/encyclopedia/defineterm.jhtml?term=control+signal> (last visited February 8, 2005).

and mixer, 2. An example of such a control unit is an instruction for the apparatus to contact a remote telephone unit." Harvey I, col. 8, lines 58-62.

Overall, it would thus appear that "overlay control signals" in claim 4 refers to the same signals that are termed "overlay modification control signals" in the preamble of claim 1. Comparing the preambles of claims 1 and 4, for example:

Claim 1

1. A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer,

the computers being adapted to generate and transmit overlay signals to their associated television receivers,

said overlay signals causing the display of user specific information related to said program material, and

with at least some of said computers being programmed to process overlay modification control signals so as to modify the overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a specific user application,

comprising the steps of:

both refer to "at least some of the computers" as having been programmed to process "overlay modification control signals" and "overlay control signals" in the same context. Although the terms "overlay modification control signals" and "overlay control signals" are obviously different, and the preamble of claim 1 further defines the "overlay modification signals" ("so as to modify ***"), the context in which those terms are used nevertheless suggests that both terms refer to the same signals.

Claim 4

4. In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer,

the computers being adapted to generate and transmit overlay video signals to their associated television receivers,

said overlay signals causing the display of user specific information related to said program material, and

with at least some of said computers being programmed to process overlay control signals [sic] transmitted to their associated receivers, each of said computers being programmed to accommodate a unique user application,

the steps of

In many cases, the specification may be used to confirm whether variant terms are used interchangeably. Here, however, the specification, unfortunately, offers little help. The specification does not use either "overlay modification control signals" or "overlay control signals."

However, turning to the other claims, dependent claim 5:

5. A process according to claim 4, further including the step of transmitting an overlay modification signal to the computers which are programmed to process overlay modification signals. [Emphasis added.]

adds the step of transmitting an overlay modification signal to "the computers which are programmed to process overlay modification signals." The antecedent basis for "the computers" in claim 4 is "at least some of said computers being programmed to process overlay control signals [sic]." That, of course, likewise suggests that "overlay modification control signals" and "overlay control signals" are being used to refer to the same signals.

Similarly, dependent claim 2:

2. A method according to claim 1, further including the step of transmitting an overlay modification signal to the computers which are programmed to process overlay modification signals, and causing said last named computers to modify their respective overlay signals in response thereto.

adds the same transmitting step to the method of claim 1 (with the addition of "causing" the computers to modify the overlay signals), thus also suggesting that "overlay modification control signals" refer to the same signals.

The prosecution history further suggests that "overlay modification control signals" and "overlay control signals" are being used to refer to the same signals. As noted above, when first submitted, asserted claims 1, 4 and 7 (application claims 18, 21 and 24) called for:

18. A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receive and computer, the computers being adapted to transmit overlay signals to their associated television receivers and with at least some of said computers being programmed to process overlay modification signals so as to modify the overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a particular user application, comprising the steps of ***

21. In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to transmit overlay video signals to their associated television receivers and with at least some of said computers being programmed to process overlay video signals to their associated television receivers and with at least some of said computers being programmed to process overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a particular user application, the steps of * * * *

24. In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to transmit overlay video signals to their associated television receivers and with at least some of said computers being programmed to process overlay modification signals so as to modify the overlay video signals transmitted to their associated receivers, each of said computers being programmed to accommodate a particular user application, and wherein a video signal containing a television program signal and an instruct-to-overlay signal are transmitted to said receiver stations, the steps of * * * * [Emphasis added.]

See Plaintiffs' Opening Markman Brief, Apx. F (Vol. 3 of 7) at PID02011-12 (Amendment of February 7, 1984). As filed, one apparent difference between application claim 18 and application claim 21 is that application claim 21 did not call for modifying "overlay signals." In their remarks explaining those newly-filed claims, though, Harvey *et al.* explained:

Newly submitted claims 18-25 are method claims directed to a method of communicating television program material to a multiplicity of receiver stations. Claims 18 and 19 include both transmitting and receiving steps; claims 20 and 21 are directed to the transmitting steps; and claims 22 and 23 are directed to the receiving steps. Claims 24-28 are directed to a portion of the receiving apparatus.

The method claims 18-25 pertain to systems wherein video information including television program material is transmitted to a multiplicity of receiver stations. Each of the receiver stations includes a television receiver and a computer, with the computer being capable of transmitting overlay video signals to its associated receiver. In addition, the computers can be programmed to modify the overlay video signals. The transmitter transmits a video signal which contains the television program material and an "instruct-to-overlay" signal which, as set forth in the various claims, causes the computer to transmit the overlay signals to the associated receivers "thereby to present a display consisting of the television program and the computer generated overlay." [Emphasis added.]

Id. at PID02016-17. Those remarks, of course, suggest that the computers called for in all of the application claims, *i.e.*, including application claim 21, could be programmed to modify the overlay signals.

Continuing the prosecution history, in an office action, the examiner rejected application claims 18, 21 and 24 over, *inter alia*, various prior art, reasoning: "Bourassin *et al.* (Figures 1 and 6) disclose a remotely actuated computer, *i.e.*, microprocessor, controlled overlay system for a television display including a multitude of peripheral units. Crosby discloses the actuation of a device based on the use of a signal embedded in a television program. It is deemed obvious to substitute the remote actuation signal of Crosby for the equivalent signal of Bourassin *et al.* The balance of the art is cited to show overlay control signals." *Id.* at PID02024-25 (Office Action of April 18, 1984). In response, Harvey *et al.* amended application claims 18, 21 and 24 (but not the disputed term "overlay control signals"), and remarked, *inter alia*, that "to further clarify the distinctions between applicants' invention and the prior art * * * * Crosby, of course, does not use the embedded signal for the purpose of modifying the visual display and, therefore, clearly cannot suggest the possibility that the control signal may generate user specific overlays at the individual subscriber stations." *Id.* at PID02034-35 (Amendment of October 9, 1984). In distinguishing Crosby, Harvey *et al.* emphasized distinguishing features of their invention, although their remarks were not tied to a particular claim, such as application claim 21. That is, Harvey *et al.* made clear that their invention used control signals "for the purpose of modifying the visual display."

The examiner again rejected Harvey *et al.*'s claims, reasoning that "[i]t is deemed obvious to provide Baer or Kimura with a locally generated overlay which is controlled by an embedded signal." *Id.* at PID02038 (Office Action of January 9, 1985). In response, Harvey *et al.* amended application claims 18, 21 and 24 by, *inter alia*, adding the word "control" to the disputed term (underlining and bracketing in original, boldface added):

18. (Twice Amended) A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay [modifica-

tion] modification control signals so as to modify the overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a [particular] unique user application, comprising the steps of:
* * * *

21. (Twice Amended) In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay video signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay control signals transmitted to their associate receivers, each of said computers being programmed to accommodate a [particular] unique user application, the steps of * * * *

24. (Twice Amended) In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay video signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay modification control signals so as to modify the overlay video signals transmitted to their associated receivers, each of said computers being programmed to accommodate a [particular] unique user application, and wherein a video signal containing a television program signal and an instruct-to-overlay signal are transmitted to said receiver stations, the steps of * * * *

Id. at PID02040-42 (Amendment of July 12, 1985). Harvey *et al.* did not, however, add the term "modification" to "overlay signals" in application claim 21. Nevertheless, Harvey *et al.* did distinguish their dependent application claims 19, 22, 25 and 28 (which issued as claims 2, 5, 8 and 11, respectively), from the prior art by emphasizing transmission of "overlay modification signals."

Although the Examiner has lumped all of applicants' claims together, there are important differences and the dependent claims are patentable in their own right. Specifically, claims 19, 22, 25 and 28 require the transmission of an overlay modification signal to the individual computers. This enables altering the graphic technique used to represent the underlying data (e.g., a bar chart vs. a pie chart) or otherwise modifying each of the unique user specific computer generated overlay signals and is clearly not suggested in any of the cited references. [Emphasis added.]

Id. at PID02050. Harvey *et al.* continued:

Indeed, the fundamental concept of using computers or data processing means to generate computer overlay signals is not disclosed in the primary references; therefore, the requirement of independent claims 18, 21 and 24 that at least some of the computers be "programmed to process overlay modification control signals so as to modify the overlay signals transmitted to their associated receivers" cannot be suggested in the references. [Emphasis added.]

Id. at PID02050-51.

Harvey *et al.* thus clearly and unambiguously urged that one fundamental feature of their invention was that the computers at the subscriber station were programmed to process signals used to modify overlays. Whether called "overlay modification control signals" (claims 1 and 7), "overlay modification signals" (claims 2, 5 and 8), or "overlay control signals" (claim 4), Harvey *et al.* urged that their invention used those signals to modify overlays. In the end, therefore, the term "overlay control signal" should be construed consistently with the term "overlay modification control signal."

As in the case of "overlay modification control signals," the defendants contend, in part, that the "overlay control signals" must be construed as being limited to signals transmitted from the program transmission source. The language of claim 4, however, does not require that limitation. Indeed, the preamble of claim 4 simply calls for "at least some of said computers being programmed to process overlay control signals [*sic*] transmitted to their associated receivers." There is nothing in the language of claim 4, or implicit in the phrase "overlay control signals," that would require that such signals be transmitted from the program transmission source. Nor is there anything in the specification or prosecution history that would require the same. Accordingly, that proposed construction must be rejected.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

"Overlay control signals" means signals that control the modification of overlays. The "overlay control signals" are not limited to signals transmitted from the program source.

9. "combined display"

That term appears in asserted claim 4, which is reproduced in pertinent part below for reference, with the disputed term in boldface:

4. In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, * * *, the steps of

transmitting a video signal containing a television program signal * * *, and

transmitting an instruct-to-overlay signal * * * to thereby cause selected ones of said computers to generate and transmit their overlay signals [sic] to their associated television receiver to present a **combined display** consisting of the television program and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display unique to a specific user.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

In the context of this claim, a presentation to the user that includes the video from the television program and the overlay that was generated by the computer. The video and the overlay can be presented at the same time or sequentially.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

A different display for each user at the subscriber receiver station consisting of a television program and a video overlay related to the television program material. The video overlay is locally generated by the subscriber's computer.

Post-Hearing: A different display at a multiplicity of subscriber receiver stations consisting of a television program and a video overlay related to the television program material presented at the same time.

Plaintiffs' Harvey I Chart at 14-15; Defendants' Harvey I Chart at 21; Joint Summary at 6.

According to the defendants, the claim language "requires that the video and overlay be presented at the same time," and that PMC is thus incorrect that the video and overlay can be presented either at the same time or sequentially. Defendants' Opening *Markman* Brief at 21-22. The defendants do not further address this term.

The plaintiffs do not address this term in their briefs.

b) Discussion

The primary dispute between the parties is whether “combined display” means that the television program and overlay are presented at the same time. The claim language itself, however, defines the “combined display,” namely, that it consists of “the television program and the related computer generated overlay.” “Combine” simply means to merge. MERRIAM-WEBSTER’S ONLINE DICTIONARY.¹⁹ And that is precisely what the claim says. Also, as discussed above, an “overlay” is just that, namely, something superimposed on another thing. *See, e.g.*, WEBSTER’S NEW COLLEGATE DICTIONARY at 811 (defining “overlay” as “a transparent sheet containing graphic matter to be superimposed on another sheet.”). If by “sequential,” the plaintiffs mean that a television program is followed by the overlay such that the “overlay” and television program never form a “combined” or merged display, that proposed construction must be rejected. Although “combined display” does not preclude displaying, for example, the television program first and then the program combined with the computer generated overlay, the claim language clearly requires that at some point, both the program and the overlay are displayed at the same time. That is also consistent with the example given in the specification. *See, e.g.*, Harvey I, col. 19, lines 30 *et seq.*

As for the defendants’ proposed construction that a “combined display” is “a different display at a multiplicity of subscriber receiver stations,” that is clearly not required by the term “combined display” *per se*, but results rather from the defendants’ reliance on the remainder of the claim language, namely, “the overlays displayed at a multiplicity of said receiver stations being different, with each display unique to a specific user.”

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The phrase “a combined display consisting of the television program and the related computer generated overlay” means that the “television program” and the “related computer generated overlay” are displayed at the same time on the television receiver.

¹⁹ <http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=combine> (last visited February 14, 2005).

10. "each display unique to a specific user"

This term appears in asserted claim 4, as below:

4. In a method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, ***, the steps of

transmitting a video signal containing a television program signal ***, and

transmitting an instruct-to-overlay signal at a time when the corresponding overlay is not being displayed to thereby cause selected ones of said computers to generate and transmit their overlay signals [sic] to their associated television receiver to present a combined display consisting of the television program and the related computer generated overlay, the overlays displayed at a multiplicity of said receiver stations being different, with each display unique to a specific user. [Emphasis added.]

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

Each display is specific to a specific user.

DEFENDANTS' PROPOSED CONSTR.

[not addressed]

Post-Hearing: (no construction required)

Post-Hearing: (no construction required)

Plaintiffs' Harvey I Chart at 15; Joint Summary at 59.

The parties agree that the term "unique" means "specific." The defendants say that "[c]onstruction of the term 'specific user application' set forth above will resolve the construction of the term 'specific user.'" The plaintiffs urge that "[t]he phrase 'specific to a specific user' should be construed consistently with 'user specific signals'" in Harvey II. Joint Summary at 59.

b) Discussion

As discussed above in connection with "specific user application," the special master agrees that "unique" means "specific." The prosecution history clearly shows that Harvey *et al.* amended the word "unique" to "specific," and explained why. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID02108-09 (Amendment of March 6, 1987). The term-in-issue should thus be construed consistently with the term "specific user application."

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

- The phrase "each display unique to a specific user" means "each display specific to a specific user."

**V.
Harvey II**

A. Disclosure

Harvey II issued from an application that was filed as a continuation of the application maturing into Harvey I. Thus, Harvey I and II share the same specification and drawings. Accordingly, the background and discussion of Harvey I is applicable to Harvey II.

B. Summary of the Substantive Prosecution History

1. Original Application – February 14, 1986

Harvey *et al.* filed application Ser. No. 829,531 on February 14, 1986, as a continuation of the application maturing into Harvey I. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01669.

2. Preliminary Amendment – February 14, 1986

Along with that continuation application, Harvey *et al.* filed a preliminary amendment canceling application claims 1-17 and adding new application claims 18-19, of which claim 18 was the sole independent claim. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01674-75.

a) To the Claims

Those new application claims are reproduced below:

18. A method of communicating data to a multiplicity of receiver stations each of which includes a computer adapted to generate and transmit user specific sig-

nals to one or more associated output devices, with at least some of said computers being programmed to process modification control signals so as to modify the user specific signals transmitted to their associated output devices, each of said computers being programmed to accommodate a special user application, comprising the steps of:

transmitting an instruct-to-transmit signal to said computers at a time when the corresponding user specific information is not being transmitted to an output device,

detecting the presence of said instruct-to-transmit signal at selected receiver stations and coupling said instruct-to-transmit signal to the computers associated with said selected stations, and

causing said last named computers to generate and transmit their user specific signals to their associated output devices in response to said instruct-to-transmit signal, thereby to transmit to the selected output devices an output signal comprising said data and said related user specific signals, the output signals at a multiplicity of said output devices being different, with each output signal unique to a specific user.

19. A method according to claim 18, further including the step of transmitting a modification control signal to the computers which are programmed to process modification control signals, and causing said last named computers to modify their respective user specific signals in response thereto.

Id. at PID01674-75.

b) Applicants' Remarks

In their remarks accompanying the new claims, Harvey *et al.* simply stated that “[b]y the present amendment all of the present claims, i.e., claims 1-17, are being cancelled. New claims 17 and 18 [*sic*, 18 and 19] are being added to this application. These claims are believed to be patentable over the prior art of record in the parent application. Therefore, these claims should be allowed and the application issued as a patent.” *Id.* at PID01675.

3. Office Action – June 27, 1986

In the only office action entered against the '531 application, the examiner rejected both of Harvey *et al.*'s claims under § 103 as “unpatentable over Girault *et al.* in view of Crosby,” both of which had been cited in Harvey I. According to the examiner, “Girault *et al.* disclose an overlay sig-

nal generator transmitting a signal to be extracted and from a mixed video signal to cause user specific material to be combined with a video display (See Figs. 1 and 2 and col. 3, lines 10-30). It is deemed obvious that the system may be employed with a multiplicity of receivers, otherwise resort can be had to Fig. 1A of Crosby for a [sic] showing a transmission to a plurality of receivers." *Id.* at PID01678-79.

4. Amendment – January 2, 1987

a) To the Claims

In response, Harvey *et al.* did not amend application claims 18 and 19. Rather, they added new application claims 20-22, and argued for allowance. Of those new application claims, claim 21 was independent:

21. A method of communicating data to a multiplicity of receiver stations, each of which includes a computer adapted to generate and transmit user specific signals to one or more associated output devices, with at least some of said computers being programmed to process modification control signals so as to modify the user specific signals transmitted to their associated output devices, each of said computers being programmed to accommodate a special user application, comprising the steps of:

transmitting an instruct-to-process signal to said computers to cause each of said computers to process data in accordance with its associated special user application,

transmitting an instruct-to-output signal to said computers at a time when the corresponding user specific information is not being transmitted to an output device,

detecting the presence of said instruct-to-output signal at selected receiver stations and coupling said instruct-to-output signal to the computers associated with said selected stations, and

causing said last named computers simultaneously to output their user specific signals to their associated output devices in response to said instruct-to-output signal, thereby to transmit to the selected output devices an output signal comprising said data and said related user specific signals, the output signals at a multiplicity of said output devices being different, with each output signal, unique to a specific user.

Id. at PID01681-82.

b) Applicants' Remarks

(1) Regarding Their Invention

According to Harvey *et al.*, their invention, “[i]n its broadest concept, *** generates and outputs (displays) information specific to each of a multiplicity of subscribers (with no other subscriber having access to the information), the user specific information being coordinated with program material transmitted to all subscribers. In the ‘Wall Street Week’ example, in the course of a program broadcast to all subscribers, each subscriber’s computer may interact with the broadcast material in such a way as to present to that subscriber information relating to that subscriber’s stock portfolio at a particular point in the program. Thus, conceptually, there is a program ‘broadcast’ to all computers, each computer is programmed to process information specific to a subscriber, and each computer is caused to display that information at a time coordinated with the presentation of the program material to all subscribers.” *Id.* at PID01683. Harvey *et al.* further urged that “[i]n this application, applicant seeks to obtain claims of sufficient breadth to cover presentation other than television presentations, for example, radio and hard copy; however, the principle remains the same and the concept clearly is not disclosed in the prior art.” *Id.* at PID01683-84.

(2) Regarding Girault *et al.* and Crosby

Harvey *et al.* noted that the examiner had “combined Girault *et al.* and Crosby, asserting that it would [be] obvious to employ Girault’s system with a multiplicity of receivers in view of Crosby.” *Id.* at PID01684. Harvey *et al.* urged, however, that “Girault does not disclose the essence of applicants’ invention and, therefore, whether or not there were a multiplicity of systems as disclosed by Girault, applicants’ claimed invention would not result. Girault disclosed a system for displaying a moving map and aerial navigation data on an electronic screen. Such data clearly is user specific, but even if there were a multiplicity of such receivers, unlike applicants’ claimed invention, the information presented at the individual receivers would not be coordinated with the contents of a program transmitted to all receivers. Furthermore, and equally important, in Girault the aerial navigation data displayed is information recorded in memory 17 which ‘may take the simple form of a magnetic-tape cassette or a semiconductor store, for example’ (column 3, lines 35-39). This means that at each re-

ceiver station, the video display is merely a display of information stored in a computer. In contrast, in applicants' system, at each subscriber station the computer is programmed to process information specific to the subscriber and then to output (display) that information for that subscriber only." *Id.* Thus, Harvey *et al.* argued, "comparing Girault (with or without Crosby) to applicants' system, in Girault there is no coordination of a multiplicity of computers with a generally broadcast program and there is no ability to cause the individual computers to process information specific to the individual subscribers." *Id.* at PID01685.

Regarding application claim 18, Harvey *et al.* argued that "claim 18 distinguishes over the cited art in requiring the transmission of an instruct to transmit signal to all of the computers in the system, which means that all computers are under a common control, and then causing the computers to generate and transmit their user specific signals to their associated output devices." *Id.*

With respect to application claim 19, Harvey *et al.* urged that "[c]laim 19 is further distinguishable because it requires that a modification control signal be transmitted to the computers to cause the associated computers 'to modify their respective user specific signals.' Clearly, this concept is alien to Girault (or Crosby), and indeed is counter to the teachings of Girault, wherein each computer must be pre-programmed with navigational data representing an area of interest which cannot be variable." *Id.*

Harvey *et al.* then remarked that "[i]t is unclear to applicant how the Examiner proposes to apply Crosby which has been discussed at length in the parent application. Crosby discloses the actuation of a recorder for the purpose of recording information that already exists. The concept of generating user specific information at a multiplicity of computer stations is not disclosed." *Id.*

Harvey *et al.* also addressed the patentability of application claims 21 and 22, urging that "[c]laims 21 and 22 are more specific to the date processing feature of applicants' invention and the coordination of the user specific information with the general program material. These claims emphasize another feature of the invention." *Id.* at PID01686. In explaining application claims 21 and 22, Harvey *et al.* recounted their invention in further detail:

As explained above, in applicants' invention, each of a multiplicity of computers is controlled by instructions from one central control site and caused to generate

and transmit information specific to a single user coordinated with the program material from the central site. This means that each of a multiplicity of separate jobs must be processed simultaneously and, in effect, outputted simultaneously to a multiplicity of subscribers. When the invention is used to display video material (for example), it is necessary that each subscriber transmit the video overlay information in the same predetermined time interval so that it will appear in the proper position on each subscriber's video screen. Thus, each subscriber's computer must process the user specific information and output the information simultaneously. Claim 21, which is similar to claim 18, specifically calls for the transmission of an instruct-to-process signal and an instruct-to-output signal to the computers. The instruct-to-process signal causes each computer to process the user specific information in accordance with its program (e.g., to calculate a user's stock portfolio), and the instruct-to-output signal causes each computer simultaneously to transmit the processed information to the output device under control of the central control site.

Id.

Finally, Harvey *et al.* urged that "claims 18-20 clearly distinguish patentability over Girault and Crosby, taken individually or in combination. The concept of controlling a multiplicity of computers each separately programmed for a specific user and causing each computer to separately output its user specific information, all under control of a central control site is not disclosed or suggested in the prior art." *Id.* at PID01687.

5. Notice of Allowability – April 3, 1987

Apparently persuaded, the examiner issued a Notice of Allowability on April 3, 1987. *See id.* at PID01690.

6. Amendment After Allowance – July 6, 1987

Before the '513 application issued, however, Harvey *et al.* filed an amendment "to correct an inadvertent oversight." *See id.* at PID01691. The examiner entered the amendment without comment. *See id.* at PID01693.

Harvey *et al.*'s amendments were brief, and simply involved changing the word "unique" to "specific" in claims 18 and 21. *Id.* at PID01691. Harvey *et al.*'s explanatory remarks were likewise brief:

The foregoing amendments are proposed to correct an inadvertent oversight and to make the claims internally consistent. The language which applicants propose to amend in claims 18 and 21 state that each output signal is "unique to a specific user." However, the preamble of each claim refers to "user specific signals" and the crux of the invention lies in the ability to output signals that are specific (not necessarily "unique") to specific users (subscribers). In other words, it is the fact that the outputs relate specifically to a given user that is important, not whether or not the outputs are "unique." The term "unique" may imply that each output is different which, as was explained in the parent application, is not necessarily the case so long as the outputs are specific to the individual users.

The foregoing error was noticed only recently. Applicants submit that the proposed amendment is proper in accordance with the provisions of Rule 312 since it involves no change in scope and merely clarifies a term which, possibly, may be misdescriptive.

Id. at PID01691-92.

7. Issued Independent Claims

Harvey II issued with five claims, only two of which were independent. Those two independent claims, namely, claims 1 and 3, are reproduced below. Application claim 21 issued as claim 1, and application claim 18 issued as claim 3:

1. A method of communicating data to a multiplicity of receiver stations, each of which includes a computer adapted to generate and transmit user specific signals to one or more associated output devices, with at least some of said computers being programmed to process modification control signals so as to modify the user specific signals transmitted to their associated output devices, each of said computers being programmed to accommodate a special user application, comprising the steps of:

transmitting an instruct-to-process signal to said computers to cause each of said computers to process data in accordance with its associated special user application,

transmitting an instruct-to-output signal to said computers at a time when the corresponding user specific information is not being transmitted to an output device,

detecting the presence of said instruct-to-output signal at selected receiver stations and coupling said instruct-to-output signal to the computers associated with said selected stations, and

causing said last named computers simultaneously to output their user specific signals to their associated output devices in response to said instruct-to-output signal, thereby to transmit to the selected output devices an output signal comprising said data and said related user specific signals, the output signals at a multiplicity of said output devices being different, with each output signal specific to a specific user.

3. A method of communicating data to a multiplicity of receiver stations each of which includes a computer adapted to generate and transmit user specific signals to one or more associated output devices, with at least some of said computers being programmed to process modification control signals so as to modify the user specific signals transmitted to their associated output devices, each of said computers being programmed to accommodate a special user application, comprising the steps of:

transmitting an instruct-to-transmit signal to said computers at a time when the corresponding user specific information is not being transmitted to an output device,

detecting the presence of said instruct-to-transmit signal at selected receiver stations and coupling said instruct-to-transmit signal to the computers associated with said selected stations, and

causing said last named computers to generate and transmit their user specific signals to their associated output devices in response to said instruct-to-transmit signal, thereby to transmit to the selected output devices an output signal comprising said data and said related user specific signals, the output signals at a multiplicity of said output devices being different, with each output signal specific to a specific user.

C. Agreed Terms

The parties agree that the following terms require no construction: (1) "generate and transmit user specific signals to one or more associated output devices," *see* Joint Summary at 60 and n.79, (2) "selected output devices," *see* Joint Summary at 61 and n.80, and (3) "output signals at a multiplicity of said output devices being different." *See id.* and n.81.

D. Disputed Terms

1. "user specific signals"

The disputed term appears in claims 1 and 3. Claim 1 is reproduced below as representative, with pertinent terms emphasized:

1. A method of communicating data to a multiplicity of receiver stations, each of which includes a computer adapted to generate and transmit **user specific signals** to one or more associated output devices, with at least some of said computers being programmed to process modification control signals so as to modify the **user specific signals** transmitted to their associated output devices, each of said computers being programmed to accommodate a special user application, comprising the steps of:

transmitting an instruct-to-process signal to said computers * * *

transmitting an instruct-to-output signal to said computers at a time when the corresponding user specific information is not being transmitted to an output device,

detecting the presence of said instruct-to-output signal * * *, and

causing said last named computers simultaneously to output their **user specific signals** to their associated output devices in response to said instruct-to-output signal, thereby to transmit to the selected output devices an output signal comprising said data and said related **user specific signals**, the output signals at a multiplicity of said output devices being different, with each output signal specific to a specific user.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

Electronic signals that relate to a particular receiver station or to the user or users of that receiver station, and which may be, but do not necessarily have to be, unique to that particular station or users.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

Signals, specific to a particular user at the subscriber receiver station, locally generated by the subscriber's computer for occasional periodic output to the subscriber's output device, simultaneously with data transmitted from the program transmission source to all subscribers, only at those times during communication of the data when the user specific signals are relevant to and enhance the data communicated to all subscribers.

Post-Hearing: Signals, specific to a particular user at the subscriber receiver station for occasional periodic output to the subscriber's output device, generated simultaneously with data transmitted from the program transmission source to all subscribers, only at those times during communication of the data when the user specific signals are relevant to and enhance the data communicated to all subscribers.

Plaintiffs' Harvey II Chart at 1-2; Defendants' Harvey II Chart at 8; Joint Summary at 6-7.

The parties urge that the construction of "user specific signals" should apply to that term as it appears in claim 3, and in Harvey III, claims 20, 24 and 25.

The plaintiffs urge that the "key difference" between the parties is that the "[d]efendants seek to contravene the ordinary meaning of this term by applying numerous extraneous limitations from the preferred embodiments and inapposite statements in the prosecution history describing those embodiments." The plaintiffs urge that the defendants include a "laundry list" of improper requirements, and would "unnecessarily exclude examples in the specification that indicate that 'user specific signals' can be information output from receiver stations to a remote data collection station, such as meter/monitor or purchase information described in numerous examples from the specification," "receiver device identifiers that are appended to record output from receiver stations to remote data collection stations," and "user specific signals relating to the monitoring of programming usage." The plaintiffs further contend that dictionaries cited by the defendants do not support the defendants' proposed construction, nor did the defendants' experts "even venture [] an opinion in their opening declarations on 'user specific signals.'" Finally, the plaintiffs urge that the defendants' proposed construction is "completely at odds with special master Harmon's treatment of the similar term 'user specific information,' which he construed to mean 'information from or about a specific user.'" Plaintiffs' Opening *Markman* Brief at 5-8.

According to the defendants, however, the dispute concerns "whether the user specific signals are specific to a particular user at the subscriber receiver station or are merely specific to the receiver station itself," and "whether the user specific signal are output only at those times during communication of data to the subscriber computers when the signals are relevant to and enhance

the data being communicated.” The defendants urge that their proposed construction is “clear from the ordinary meaning of the words of the claim,” and “fully supported by the prosecution history.” The defendants contend that the user specific signals “are output only when the signals are relevant to and enhance the data being communicated,” citing the prosecution history of Harvey I. Defendants’ Opening *Markman* Brief at 23-24.

b) Discussion

There is no dispute that the “user specific signals” are, at the very least, electronic signals. According to the plain language of the claim, the “user specific signals” are generated and transmitted by a computer, and are modifiable by a computer.

The issue concerns the meaning of the term “user specific.” Turning first to the plain language of the claims, claim 1, for example, calls for a “method of communicating data to a multiplicity of receiver stations.” Tracking the “user specific signals” through claim 1, the preamble calls for each of those receiver stations to have “a computer adapted to generate and transmit user specific signals to one or more associated output devices.” The preamble also calls for “modification control signals” that the computers may process “so as to modify the user specific signals.” Then, in the last method step, claim 1 calls for causing the computers “simultaneously to output their user specific signals to their associated output devices,” and further calls for the “user specific signals” to be sent as part of an “output signal,” which is comprised of data and “user specific signals” related to that data. Finally, claim 1 calls for “the output signals at a multiplicity of said output devices” to be different, with each output signal specific to a specific user.” The foregoing demonstrates that the plain language of the claims defines the disputed signal. Ultimately, the “user specific signal” is a signal “specific to a specific user,” i.e., a signal that is specific to a subscriber.

Indeed, that is what one of ordinary skill in the art would understand “user specific signals” *per se* to mean. As the defendants point out, a “user” in the context of automatic data processing is “anyone who requires the use of services of a computing system or its products,” *see* MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS [page number illegible] (2d ed. 1978), i.e., a subscriber, and the word “specific” means “intended for, applying to, or acting on a particular thing” and “concerned particularly with the subject specified.” *See* AMERICAN HERITAGE DICTIONARY OF

THE ENGLISH LANGUAGE 1669 (4th ed. 2000). That is, the term “user specific signal” means just that, a signal that is specific to a user/subscriber.

And that, in short, is what Harvey *et al.* described in the specification, *e.g.*, the “Wall Street Week” example discussed at length above. Although the term “user specific signals” *per se* is nowhere used, Harvey *et al.* described the “overlays” that informed a subscriber of how his or her stock portfolio did. Furthermore, Harvey *et al.*’s statements during prosecution of the application maturing into Harvey II clarify that they intended the term “user specific signals” to mean just what the claims say. In their amendment of July 7, 1987, Harvey *et al.* amended application claims 18 and 21 (which issued as claims 3 and 1, respectively) to change “each output signal unique to a specific user” to “each output signal specific to a specific user.” *See Plaintiffs’ Opening Markman Brief, Apx. F (Vol. 3 of 7)* at PID01691. In their remarks, Harvey *et al.* explained that the “language which applicants propose to amend in claims 18 and 21 state that each output signal is ‘unique to a specific user.’ However, the preamble of each claim refers to ‘user specific signals’ and the crux of the invention lies in the ability to output signals that are specific (not necessarily ‘unique’) to specific users (subscribers). In other words, it is the fact that the outputs relate specifically to a given user that is important, not whether or not the outputs are ‘unique.’ The term ‘unique’ may imply that each output is different which, as was explained in the parent application, is not necessarily the case so long as the outputs are specific to the individual users.” [Emphasis added.] *Id.* at PID01691-92. Thus, a “user specific signal” is simply a signal that is specific to a user/subscriber, or, put another way, a signal that relates to a particular user/subscriber.

Both parties, however, suggest that additional limitations are imposed by the term. The plaintiffs, on the one hand, propose that the “user specific signals” (1) “relate to a particular receiver station or to the user or users of that receiver station,” and (2) “may be, but do not necessarily have to be, unique to that particular station or users.”

As for (1), Harvey *et al.* plainly argued that the signal was specific to a user or subscriber, not to a particular receiver station, *i.e.*, the claims do not say “receiver-station-specific signals.” That is not to say that the disputed signals may not also be specific to a receiver station, but that is not what the claims require. The plaintiffs, though, also point to portions of the specification that, according

to the plaintiffs, support their contention that the disputed signals are specific to a receiver station. *See Plaintiffs' Opening Markman Brief* at 7. In one example the plaintiffs point to, for example, at column 3, line 67 to column 4, line 3, the specification explains in a section entitled "Summary of the Invention:" "The method provides monitoring techniques to develop data on patterns of viewership and to permit the determination of specific usage at individual receiving sites for various purposes including, for example, the billing of individual customers." The plaintiffs also point to column 15, lines 30-35, and column 16, lines 33-35, which appears to be a description of that method:

FIG. 5 illustrates methods for monitoring reception and operation which methods can be used to gather statistics on program[m]ing usage and associated uses of other data transmissions and equipment. Such statistics are necessary, for example, in the development of television program ratings.

The claims, however, are clearly not drawn to that embodiment. Indeed, the signals described in that embodiment are unique identifiers in the television programming for tracking purposes. The claims, on the other hand, are drawn to communicating data to a multiplicity of receiver stations, not gathering data from those stations. As Harvey *et al.* stated during prosecution, their invention:

In its broadest concept, * * * generates and outputs (displays) information specific to each of a multiplicity of subscribers (with no other subscriber having access to the information), the user specific information being coordinated with program material transmitted to all subscribers. In the "Wall Street Week" example, in the course of a program broadcast to all subscribers, each subscriber's computer may interact with the broadcast material in such a way as to present to that subscriber information relating to that subscriber's stock portfolio at a particular point in the program. Thus, conceptually, there is a program "broadcast" to all computers, each computer is programmed to process information specific to a subscriber, and each computer is caused to display that information at a time coordinated with the presentation of the program material to all subscribers.

See Plaintiffs' Opening Markman Brief, Apx. F (Vol. 3 of 7) at PID01683 (Amendment of January 2, 1987). In short, that example does not support the plaintiffs' contention that the "user specific signals" may be "receiver-station-specific signals." The same may be said of the other examples that the plaintiffs rely on, such as the embodiment for "Co-ordinating a Stereo Simulcast," which does not use user specific signals, and the "Julia Childs" cooking show example, which describes allowing a viewer to purchase and print a recipe.

The plaintiffs also rely on one of the defendants' patents, namely, U.S. Patent No. 4,829,569 ("the '569 patent"), filed July 8, 1986, issued May 9, 1989, and entitled "Communications of Individual Messages to Subscribers in a Subscription Television System." The plaintiffs assert that the '569 patent is evidence that an artisan would understand "user-specific" to refer not only to the user, but also to the user's receiver station. *See* Plaintiffs' Post-Hearing *Markman* Brief at 14. According to the plaintiffs:

This patent * * * discloses that display templates can be broadcast from a cable headend so that they can be completed at the receiver station with "user-specific" information such as billing information:

"The [receiver station] microprocessor can select a template page from the sequence of template pages continually being sent by the broadcaster and can complete it with user-specific billing information, all as generally discussed above." '569 Patent, Col. 4, lines 43-47 [emphasis added].

It is well-known in this art that billing information, such as pay-per-view records (similar to the "meter/monitor" information of the Harvey specification), is stored in the receiver station cable box without particular reference to the separate users of the receiver station (e.g., Mom versus Dad versus Son ordering the pay-per-view movie). S-A's own patent shows that the customary understanding is that such information particular to the receiver station is "user specific."

Id. at 14-15. But that is not, in fact, what the '569 patent discloses. Aside from the issue of whether the '569 patent truly represents an artisan's knowledge, that reference makes clear that "user-specific" means just that. The foregoing excerpt that the plaintiffs rely on is from the '569 patent's "Summary of the Invention." Other excerpts from that section explain that "a further object of the invention to provide a subscription television system in which individual text messages can be transmitted to individual subscribers, in which the message can only be received by the proper receiver and in which the text is very heavily protected against improper receipt * * *." *Id.* at col. 3, lines 14-19. Another portion explains:

In a preferred embodiment, the broadcaster continually sends teletext information which is useful in subsequently assembling messages. The teletext information repetitively transmitted includes "templates." For example, should the subscriber seek to ascertain his billing status, he will so indicate by pressing a button or buttons on a user key pad comprised by his decoder. A microprocessor comprised in the decoder will note this request and determine the number of a template suitable for displaying this information. When that page of text is subse-

quently transmitted, as part of the regular sequence of teletext messages, the microprocessor selects it, and then completes the template by filling in various dollar amounts and the like unique to the particular subscriber. This completes assembly of the billing report requested. The microprocessor then can display the complete billing report. In this way, the teletext information comprised in the template, that is, the information needed for the text message which is not user specific, such as column headings, current dates, the broadcaster's name and address, which is common to all subscribers, need not be stored at the user location. This greatly reduces the amount of memory which must be provided for each decoder. In the same way, the templates can be varied by the broadcaster, e.g., to update the listing of services made available or the like. [Emphasis added.]

Id. at col. 4, lines 14-40. It may be, of course, that billing records are stored in the receiver station without reference to the different users of that station, as the plaintiffs suggest. But that is not what the '569 patent discloses, and, more to the point, what the disputed claims require. The '569 patent in fact uses "user specific" in the same sense as used by Harvey *et al.* Again, the asserted claims require "user specific," not "receiver station specific." A service, such as a billing service, may require routing a "user specific signal" to a receiver station "address" simply because that is the only way to get it to the subscriber, but that does not mean that the signal is specific to that "address." By analogy, suppose that a family of three – say, the Mom, Dad and Son posed by the plaintiffs – lived at the same house. Rather than imagining delivery of cable service, it may be easier to visualize delivery of mail by the U.S. Postal Service. Common experience suggests that mail may be specific to any of the members of the family, *e.g.*, a thank-you note directed to Mom, a package of lawnmower parts directed to Dad, and a magazine directed to Son. All of those pieces of mail must be routed to the house in order to reach Mom, Dad or Son, but that mail is nonetheless specific to those individuals. That is, the individualized mail is analogous to the "user specific signals." Alternatively, the USPS might deliver an envelope filled with assorted coupons addressed to "Resident" or "Household," which is also routed to the house, but not to Mom, Dad or Son in particular. That generally-addressed mail is not, by analogy, a "user specific signal," even though a particular individual may in fact see that piece of mail – that mail would be analogous to a "receiver-station-specific signal." Returning to the claims, then, the "user specific signals" are signals specific to a user/subscriber, or signals that pertain to a particular user/subscriber. It may be that there are other users/subscribers using the receiver station – the claim does not preclude that situation – such that, in the "Wall Street Week" example, each subscriber sees his or her own overlay (perhaps simultaneously on different

parts of the display). It may be that the "user specific signals" must be "routed" to a particular receiver station for "delivery" to a subscriber. The claims certainly do not appear to exclude that possibility. But the "user specific signals" are not signals simply directed to a receiver station for anyone who might use that station. The claims and intrinsic evidence plainly require some relation to a particular user/subscriber in order for a signal to be a "user specific signal." In sum, the plaintiffs' contention that the disputed signals may be specific either to the subscriber or receiver station must be rejected. The signals must be specific to the user/subscriber.

As for (2), that proposed construction is, in light of the prosecution history discussed above, clearly accurate, with the exception that, again, the claims call for the disputed signals to be specific to the user/subscriber, not the receiver station.

Defendants, on the other hand, propose several other limitations. The defendants propose that the disputed signals be (1) specific to a particular user at the subscriber receiver station (2) for occasional periodic output (3) to the subscriber's output device, (4) generated simultaneously with data transmitted from the program transmission source to all subscribers, (5) only at those times during communication of the data when the user specific signals are relevant to and enhance the data communicated to all subscribers.

With respect to (1), the claim, once again, requires that the signal be specific to a user/subscriber, *i.e.*, relate to a particular user/subscriber. As for whether the subscriber must be "at the subscriber receiver station," the claims and intrinsic evidence say nothing about that, and the defendants have pointed to nothing in the term "user specific signals" that, when taken alone or in the context of the claim, connotes the location of the user. It may be reasonable, of course, to assume that a subscriber would be stationed at the output device in order to gain the benefit of the "user specific information," but that is not required by the claim. The specification explains that "Wall Street Week" may be turned on automatically, *see Harvey II*, col. 19, lines 9-33, and that the computer may be pre-programmed to respond to signals that generate and transmit overlays for display on the television receiver. *See id.* at lines 40-67. In that "Wall Street Week" example, the subscriber may be present to see the display, but the invention, as described, may certainly function

without the subscriber's presence. The point is that the claims do not require anything of the subscriber.

Regarding (2) and (5), the defendants rely on the prosecution history of the "overlay signals" called for by the claims of Harvey I (discussed above). The term "user specific signals," however, is a different term than "overlay signals." Rather, Harvey *et al.* made clear that they intended the claims of Harvey II to be "of sufficient breadth to cover presentation other than television presentations, for example, radio and hard copy * * *." Plaintiffs Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01683. Indeed, the prior art in Harvey I, the parent application, distinguished by Harvey *et al.* for the term "overlay signals," namely, Kimura and Baer, was concerned with television, not radio or print. In such a situation, the Federal Circuit has held that the prosecution history of related applications is not relevant if there are no common claim terms in dispute. See *Advanced Cardiovascular Systems, Inc. v. Medtronic, Inc.*, 265 F.3d 1294, 1305-6 (Fed. Cir. 2001)(the reason ACS had filed the application maturing into the patent-in-suit was to obtain broader claim coverage than in the parent applications). Thus, those proposed limitations must be rejected.

As for (3), the defendants rely on the prosecution history of Harvey II. The plain language of the claims, though, simply calls for an "associated output device," the construction of which is discussed below. The claims do not state whether the output device is the subscriber's or not. Again, it may be reasonable to assume that, practically speaking, the output device is the subscriber's, particularly in light of Harvey *et al.*'s statement during prosecution that "at each subscriber station the computer is programmed to process information specific to the subscriber and then to output (display) that information for that subscriber only." But that is not the same as saying that the disputed term should be so limited. Again, nothing about the term "user specific signals" *per se* requires that the "user specific signals" must be output to the subscriber's output device.

Finally, with respect to (4), the defendants contend that the "user specific signals" must be generated simultaneously with data transmitted from the program transmission source to all subscribers. The defendants have not pointed to anything in the term "user specific signals" *per se* that requires such a limitation. Certainly, the claims do not, on their face, require that. Again, claims 1 and 3 are method claims that call for, *inter alia*, "a computer adapted to generate and transmit user

specific signals to one or more associated output devices." Pertinent to the discussion, the last method step of those claims differ (the differences are underlined) as follows:

CLAIM 1

causing said last named computers simultaneously to output their user specific signals to their associated output devices in response to said instruct-to-output signal, thereby to transmit to the selected output devices an output signal comprising said data and said related user specific signals, the output signals at a multiplicity of said output devices being different, with each output signal specific to a specific user.

CLAIM 3

causing said last named computers to generate and transmit their user specific signals to their associated output devices in response to said instruct-to-transmit signal, thereby to transmit to the selected output devices an output signal comprising said data and said related user specific signals, the output signals at a multiplicity of said output devices being different, with each output signal specific to a specific user.

The claims expressly require the "user specific signals" to be transmitted simultaneously with the data, i.e., "thereby to transmit to the selected output devices an output signal comprising said data and said related user specific signals." That is, the computers output an "output signal" that is comprised of data and "user specific signals," i.e., the data and "user specific signals" are transmitted together to the output device.

It is unclear whether the defendants propose that the signals be generated simultaneously with generation of data or with transmission of data. In any event, the claims simply require that the "user specific signals" be transmitted simultaneously with the data. The claims do not, however, require that that disputed signals be generated simultaneously with the data, nor do the claims say anything about when the data is generated. Further, although both claims 1 and 3 mention generation of "user specific signals," only claim 3 expressly mentions anything about when those signals are generated. Once again, the plain language of the claims defines what the "user specific signals" are, how they are used, and where they come from.

If the defendants are simply paraphrasing the claims, the claims are readily understandable and do not need such paraphrasing. If, on the other hand, the defendants propose something different than what the claims say, there is nothing in the intrinsic record to support any additional limitations. The specification says nothing of such "simultaneous" generation. Nor does the prosecution history. Although Harvey *et al.* did use the word "simultaneous" while prosecuting the appli-

cation that matured into Harvey II; they used that term in the same way that claim 1 uses that term, namely, to explain that the computers (plural) all process and output their signals at the same time:

As explained above, in applicants' invention, each of a multiplicity of computers is controlled by instructions from one central control site and caused to generate and transmit information specific to a single user coordinated with the program material from the central site. This means that each of a multiplicity of separate jobs must be processed simultaneously and, in effect, outputted simultaneously to a multiplicity of subscribers. When the invention is used to display video material (for example), it is necessary that each subscriber transmit the video overlay information in the same predetermined time interval so that it will appear in the proper position on each subscriber's video screen. Thus, each subscriber's computer must process the user specific information and output the information simultaneously. Claim 21, which is similar to claim 18, specifically calls for the transmission of an instruct-to-process signal and an instruct-to-output signal to the computers. The instruct-to-process signal causes each computer to process the user specific information in accordance with its program (e.g., to calculate a user's stock portfolio), and the instruct-to-output signal causes each computer simultaneously to transmit the processed information to the output device under control of the central control site. [Emphasis added.]

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01686. That is, Harvey *et al.* explained that the computers operate simultaneously with each other, not that the "user specific signals" are necessarily generated simultaneously with the data. In short, there is simply no support for the extraneous limitations that the defendants propose.

Finally, as for the parties' suggestion that the construction of "user specific signals" should apply to the term "user specific output information content" as it appears in Harvey III, claims 20, 24 and 25, that is discussed in connection with that patent below.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

"User specific signals" are signals that are specific to a user/subscriber, *i.e.*, signals that relate to a particular user/subscriber.

2. "associated output device"

Both asserted claims 1 and 3 call for the disputed term. Claim 1 is deemed representative, and is reproduced below for reference, with the disputed term in boldface:

1. A method of communicating data to a multiplicity of receiver stations, each of which includes a computer adapted to generate and transmit user specific signals to one or more **associated output devices**, with at least some of said computers being programmed to process modification control signals so as to modify the user specific signals transmitted to their **associated output devices**, each of said computers being programmed to accommodate a special user application, comprising the steps of:

transmitting an instruct-to-process signal * * *,

transmitting an instruct-to-output signal to said computers at a time when the corresponding user specific information is not being transmitted to an **output device**,

detecting the presence of said instruct-to-output signal * * *, and

causing said last named computers simultaneously to output their user specific signals to their **associated output devices** in response to said instruct-to-output signal, thereby to transmit to the selected **output devices** an output signal comprising said data and said related user specific signals, the output signals at a multiplicity of said **output devices** being different, with each output signal specific to a specific user.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

A device capable of receiving an input and providing an output, such as a display, monitor, printer, or transmitter for presenting or delivering data, video, or audio to a user or a device at a local or a remote site.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

A device closely connected to a machine which translates electrical impulses representing processed data into permanent results such as printed forms, punched cards and magnetic writing on tape.

Post-Hearing: Devices physically located at a receiver station site that translate electrical impulses representing data into results, such as a printer.

Plaintiffs' Harvey II Chart at 2; Defendants' Harvey II Chart at 10; Joint Summary at 7.

The parties urge that the construction of "associated output device" should apply to that term as it appears in Harvey III, claims 20, 24 and 25, and Harvey IV, claim 1.

According to the defendants, the dispute concerns whether the output device must be "closely connected to, i.e., physically located at, the receiver station's site, as opposed to a remote site." The defendants contend that the "associated output device" must be physically located at the receiver station because the patentees stated during prosecution that "at each subscriber station the computer is programmed to process information specific to the subscriber and then to output (display) that information for that subscriber only." Thus, the defendants urge, because the subscriber is located at the receiver station, the "associated output device" must also be physically located at that receiver station in order to "output (display) that information for that subscriber only." Defendants' Opening *Markman* Brief at 24-25.

The plaintiffs say they "agree that the output device must be located at the receiver station, but the target of the output device need not be." According to the plaintiffs, "neither the claim language and file history dictate that the target of the output device must be a human, or that it be local to the receiver station." Plaintiffs' Reply Brief at 7-8.

b) Discussion

The parties apparently agree that the "associated output devices" must be physically located at the receiver station.

Thus, the dispute, if any, concerns the meaning of "output devices." According to one definition provided by the parties, an "output device" is "the part of a machine that translates the electrical impulses representing data processed by the machine into permanent results such as printed forms, punched cards, and magnetic writing on tape." Sippl and Sippl, COMPUTER DICTIONARY 369 (2d ed. 1980). Of course, the examples in the specification – notably the "Wall Street Week" example – suggest that the "output" does not have to be "permanent results," but may include, for example, television displays. Thus, the defendants are correct that the disputed terms connote devices that translate electrical impulses representing data into results. Also, as the plaintiffs point out, there is no requirement that the target of the "output device" be human.

The parties apparently agree that "associated output devices" should be construed the same way in Harvey III, claims 20, 24 and 25, and in Harvey IV, claim 1. The special master agrees. The parties' contentions with respect to "associated output devices" is the same for that term as it appears in Harvey III and IV. *See, e.g.*, Plaintiffs' Harvey IV Chart at 6-7; Defendants' Harvey IV Chart at 10.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

"Associated output devices" are devices physically located at a receiver station site that translate electrical impulses representing data into results.

3. "modification control signals"

The disputed term appears in asserted claims 1 and 3. Claim 1 is representative, and is reproduced below for reference, with the disputed term in boldface:

1. A method of communicating data to a multiplicity of receiver stations, each of which includes a computer adapted to generate and transmit user specific signals to one or more associated output devices, with at least some of said computers being programmed to process **modification control signals** so as to modify the user specific signals transmitted to their associated output devices, each of said computers being programmed to accommodate a special user application, comprising the steps of: * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

A signal that controls the modification of the user-specific signals recited in this claim.

Post-Hearing: [says that no construction is necessary; otherwise, the term means "a signal that controls the modification of the corresponding element of the claim (e.g., the user-specific signals recited in claim 3 of [Harvey II], or 'said computers' method of processing data and generating output information content' re-

DEFENDANTS' PROPOSED CONSTR.

Control signals transmitted from the program transmission source that cause a subscriber computer to modify the user specific signals generated locally by the subscriber computer and transmitted to an associated output device for communication to a user at the subscriber receiver station.

Post-Hearing: Control signals transmitted from the program transmission source that cause

cited in claim 20 of [Harvey III].)"]

a subscriber computer to modify the user specific signals for communication to a user at the subscriber receiver station.

Plaintiffs' Harvey II Chart at 2; Defendants' Harvey II Chart at 12; Joint Summary at 8.

The parties urge that the construction of "modification control signals" should apply to that term as it appears in claim 3. The defendants further urge that term should apply in the same manner in Harvey III, claims 20, 24 and 25.

According to the plaintiffs, the "[d]efendants' proposed definition is overly restricted," and "unnecessarily requires that the signal be sent by the headend," a requirement that the plaintiffs say is unsupported by the intrinsic evidence. Furthermore, the plaintiffs urge that the "[d]efendants' definition unreasonably restricts the signal to one that causes an event to occur," and urge that "not all control signals actually cause an event to occur." According to the plaintiffs, one of ordinary skill in the art would understand a control signal to "be a signal that 'controls' the way in which an event or series of events occurs. It need not 'cause' any particular result, such as modification." The plaintiffs urge that the plain language of the claim "simply requires that the modification control signal be processed and that the computers' method of processing data be modified. It does not require the modification control signal to do the modifying directly or to be the direct cause of the modification. The modification control signal is simply processed by computers to control the modification process in some way." Furthermore, the plaintiffs contend that the defendants improperly use the same definition for "modification control signals" in both Harvey I and Harvey III, "despite the different context." According to the plaintiffs, "[n]othing in [Harvey III] claims draws any connection between the modification control signals and the user specific signals, or requires the modification of user specific signals." [Plaintiffs' emphasis.] Plaintiffs' Opening *Markman* Brief at 8-12.

Defendants, on the other hand, urge that the disputed term "be construed as set forth with respect to 'overlay modification control signal' in [Harvey I] claim 1." Defendants' Opening *Markman* Brief at 26.

b) Discussion

As is evident from the post-hearing proposed constructions, the parties' respective positions changed somewhat. However, neither party discussed their new positions in post-hearing briefs. Given the disparity between the defendants' post-hearing proposed constructions for "overlay modification control signal" in Harvey I, *i.e.*, "control signals transmitted from the program transmission source that controls the modification of overlays," and "modification control signal" here, it is not clear that the defendants truly urge that the two terms should be construed in the same manner.

Nevertheless, there is no dispute that the "modification control signals" are, at the very least, just that – signals. The asserted claims use that term in the context of "computers being programmed to process modification control signals so as to modify the user specific signals transmitted to their associated output devices." That is, the plain language of the claim defines the use of the "modification control signals," namely, that they are processed "so as to modify the user specific signals transmitted to their associated output devices" – just as the claims in Harvey I expressly defined use of the "overlay modification control signals." Again, Harvey *et al.* made clear that they intended the claims of Harvey II to be "of sufficient breadth to cover presentation other than television presentations, for example, radio and hard copy * * *," Plaintiffs Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01683, and so it is clear that Harvey *et al.* called for "modification control signals" used to control the modification of "user specific signals" in a broader sense than the "overlay modification control signals" used to control the modification of overlays in Harvey I. That difference in scope, though, does not negate the fact that the claims clearly define the function of the disputed signals.

And that is sufficient. Going beyond that attempts to read too much into "modification control signals" *per se*. As discussed above, the disputed term is simply a signal defined by the plain language of the claim. The defendants, however, urge that the term "modification control signals" also connotes (1) where the signals come from, (2) that those signals "cause" modification, and that (3) such modification is for communication to a user at the subscriber receiver station. It does not.

Regarding (1), the defendants raised the same issue with respect to "overlay modification control signals" and "overlay control signals" in Harvey I, claims 1 and 4, as discussed above. As discussed there, nothing in the claims or intrinsic evidence requires that those signals come from the program source, or any other particular location. The situation is the same here. Independent claims 1 and 3 do not call for transmittal of the "modification control signals," much less require that those signals be transmitted from a particular location. Rather, it is dependent claims 2 and 4, which depend from claims 1 and 3, respectively, that call for transmittal of the "modification control signals." Claim 2 is representative:

2. A method according to claim 1, further including the step of transmitting a modification control signal to the computers which are programmed to process modification control signals, and causing said last named computers to modify their respective user specific signals in response thereto.

However, the dependent claims also do not require transmission of the "modification control signals" from the program source. None of the claims call for the disputed signals to be transmitted from the program source.

Nor does the specification and prosecution history require that such a limitation be inherent in the term "modification control signals." As discussed above in connection with the "overlay modification control signals" of Harvey I, the "Wall Street Week" embodiment of the specification does not require transmittal of "modification control signals" from the program source. Harvey *et al.*'s general discussion of that embodiment in the prosecution history of Harvey II does not require otherwise:

In its broadest concept, this invention generates and outputs (displays) information specific to each of a multiplicity of subscribers (with no other subscriber having access to the information), the user specific information being coordinated with program material transmitted to all subscribers. In the "Wall Street Week" example, in the course of a program broadcast to all subscribers, each subscriber's computer may interact with the broadcast material in such a way as to present to that subscriber information relating to that subscriber's stock portfolio at a particular point in the program. Thus, conceptually, there is a program "broadcast" to all computers, each computer is programmed to process information specific to a subscriber, and each computer is caused to display that information at a time coordinated with the presentation of the program material to all subscribers."

Id. at PID01683. (Amendment of January 2, 1987). Indeed, in their later comments in that amendment, Harvey *et al.* explained that the control signals came from a “central control site,” namely, a generic source:

As explained above, in applicants’ invention, each of a multiplicity of computers is controlled by instructions from one central control site and caused to generate and transmit information specific to a single user coordinated with the program material from the central site. This means that each of a multiplicity of separate jobs must be processed simultaneously and, in effect, outputted simultaneously to a multiplicity of subscribers. [Emphasis added.]

Id. at PID01686. That “central control site” may, of course, be the program transmission source of the “modification control signals,” but does not have to be. In short, neither the specification nor the prosecution history limits “modification control signals” to those transmitted from the program transmission source.

As for (2), *i.e.*, whether the disputed signals “cause” modification, the plain language of independent claims 1 and 3 defines their function – the “modification control signals” are processed “so as to modify the user specific signals transmitted to their associated output devices.” Furthermore, dependent claims 2 and 4, as noted above, expressly state whether the “modification control signals” must “cause” modification of the “user specific signals.” Claim 2, again, calls for:

2. A method according to claim 1, further including the step of transmitting a modification control signal to the computers which are programmed to process modification control signals, and causing said last named computers to modify their respective user specific signals in response thereto. [Emphasis added.]

In other words, claims 1 and 3 simply call for the existence of the “modification control signals,” but do not otherwise require that anything actually be done with them (although, again, claims 1 and 3 define the function of the disputed signals). Claims 2 and 4, on the other hand, do call for the use of the disputed signals and state exactly how they are to be used, and that resolves the issue – the plain language of the claims control. That is, what the “modification control signals” control, cause, influence, *etc.* is governed by the plain language of the claim, not by a definition or other inherent characteristic of the term.

Finally, the defendants' proposed limitation (3) must also be rejected for much the same rationale – the plain language of the claims control. Claim 1, again, calls for "computers being programmed to process modification control signals so as to modify the user specific signals transmitted to their associated output devices." The plain language of claim 1 thus calls for modified "user specific signals" to be transmitted to their associated output devices, not to a user at a subscriber receiver station as the defendants propose. The term "modification control signals" does not, by definition, connote that limitation.

As for whether construction of this term should apply as this term appears in Harvey III, claims 20, 24 and 25, that is discussed below, in connection with that patent.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The plain language of the claims defines the "modification control signals." The "modification control signals" are not limited to signals transmitted from the program source.

4. "special user application"

The disputed term appears in asserted claims 1 and 3. Claim 1 is selected as representative, and is reproduced below, with the disputed terms in boldface:

1. A method of communicating data to a multiplicity of receiver stations, each of which includes a computer adapted to generate and transmit user specific signals to one or more associated output devices, with at least some of said computers being programmed to process modification control signals so as to modify the user specific signals transmitted to their associated output devices, each of said computers being programmed to accommodate a **special user application**, comprising the steps of:

transmitting an instruct-to-process signal to said computers to cause each of said computers to process data in accordance with its associated **special user application**,

transmitting an instruct-to-output signal * * *,

detecting the presence of said instruct-to-output signal * * *,
causing said last named computers simultaneously to output * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[same as in Harvey I, claim 1]

DEFENDANTS' PROPOSED CONSTR.

[same as in Harvey I, claim 1]

Post-Hearing: [no change]

Post-Hearing: [no change]

Plaintiffs' Harvey II Chart at 2-3; Defendants' Harvey II Chart at 12; Joint Summary at 4 n.4.

b) Discussion

The parties agree that this term should be construed in the same way as "specific user application" in Harvey I (discussed above). The special master agrees. Claims 1 and 3 of Harvey II use that the term "special user application" in the same way as claim 1²⁰ of Harvey I uses the term "specific user application." Further, Harvey II is, as mentioned above, a continuation of Harvey I, and the term "special user application" finds the same specification support as "specific user application."

Harvey II's prosecution history does not require a different conclusion. In describing the "broadest concept" of their invention, Harvey *et al.* explained that "conceptually, there is a program 'broadcast' to all computers, each computer is programmed to process information specific to a subscriber * * *." Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01683 (Amendment of January 2, 1987). In distinguishing Girault *et al.*, Harvey *et al.* again urged that "at each subscriber station the computer is programmed to process information specific to the subscriber and then to output (display) that information for that subscriber only." *Id.* at PID01684. Harvey *et al.*'s final

²⁰ Harvey I, claim 1 calls for, in pertinent part:

1. A method of communicating television program material to a multiplicity of receiver stations each of which includes a television receiver and computer, the computers being adapted to generate and transmit overlay signals to their associated television receivers, said overlay signals causing the display of user specific information related to said program material, and with at least some of said computers being programmed to process overlay modification control signals so as to modify the overlay signals transmitted to their associated receivers, each of said computers being programmed to accommodate a specific user application, comprising the steps of: * * * * [Boldface added.]

argument in that amendment was that “[t]he concept of controlling a multiplicity of computers each separately programmed for a specific user and causing each computer to separately output its user specific information, all under control of a central control site is not disclosed or suggested in the prior art.” *Id.* at PID01687. That last argument, namely, “each separately programmed,” may be read to mean a customized program, but in the context of Harvey *et al.*’s other arguments, that argument is more reasonably understood to emphasize that the “user specific signals” do not come from the “central control site,” but are rather generated by the computers of the receiver station.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

“Specific user application” means a computer program that provides user-specific information.

5. “transmitting an instruct-to-process signal”

This term appears in claim 1, which is reproduced below for reference (the disputed term is in boldface):

1. A method of communicating data to a multiplicity of receiver stations, each of which includes a computer adapted to generate and transmit user specific signals to one or more associated output devices, with at least some of said computers being programmed to process modification control signals so as to modify the user specific signals transmitted to their associated output devices, each of said computers being programmed to accommodate a special user application, comprising the steps of:

transmitting an **instruct-to-process signal** to said computers to cause each of said computers to process data in accordance with its associated special user application,

transmitting an instruct-to-output signal * * *,

detecting the presence of said instruct-to-output signal * * *,

causing said last named computers simultaneously to output their user specific signals to their associated output devices in response to said instruct-to-output signal, * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

Transmission of a signal, from a source at a location other than the receiver station, that instructs a computer to process information or data at the receiver station.

Post-Hearing: [says no construction is necessary; otherwise, same construction as above]

DEFENDANTS' PROPOSED CONSTR.

Transmitting a control signal from the program transmission source that causes a subscriber computer to locally produce user specific signals using its associated special user application for output to its one or more associated output devices for occasional periodic display, simultaneously with the communicated data, only at those times during communication of the data when the user specific signals are relevant to and enhance the data communicated.

Post-Hearing: A control signal from the program transmission source that causes subscriber computers to simultaneously process data.

Plaintiffs' Harvey II Chart at 10; Defendants' Harvey II Chart at 13; Joint Summary at 9.

According to the defendants, the dispute concerns "whether the 'instruct-to-process' signal (1) causes one or more subscriber computers to locally produce user specific signals for simultaneous display/presentation and (2) is transmitted from the program transmission source." The defendants urge that both (1) and (2) are "supported by the prosecution history." Defendants' Opening *Markman* Brief at 26-27; Defendants' Post-Hearing *Markman* Brief at 6.

The plaintiffs do not address this term in their *Markman* briefs.

b) Discussion

As with many of the other "signals" called for in the asserted claims, the "instruct-to-process signal" is simply a signal. Also as with many of the other "signals" called for in the disputed claims, the claim language expressly defines what that signal is supposed to do. Here, claim 1 expressly requires that the "instruct-to-process signal" be transmitted to the computers "to cause each of said computers to process data in accordance with its associated special user application."

The defendants further propose, however, that the "instruct-to-process signal," by definition, (1) is "from the program transmission source" and (2) causes the computers to "simultaneously process data." The defendants proposed a similar construction (1) in connection with "modification

control signals" above, and the "overlay modification control signals" and "instruct-to-overlay signal" of Harvey I. As discussed there, that proposed limitation was rejected and need not be further discussed here. Suffice it to say that nothing in the claims, specification or prosecution history of Harvey I or II requires such a limitation.

With respect to the defendants' proposed limitation (2), claim 1 expressly calls for "causing said last named computers simultaneously to output their user specific signals * * * in response to said instruct-to-output signal," but does not expressly require simultaneous processing of data in response to "instruct-to-process signals." The prosecution history, however, clearly does.

During prosecution, though, Harvey *et al.* explained, with respect to claim 21 (which issued as claim 1), what their invention was:

As explained above, in applicants' invention, each of a multiplicity of computers is controlled by instructions from one central control site and caused to generate and transmit information specific to a single user coordinated with the program material from the central site. This means that each of a multiplicity of separate jobs must be processed simultaneously and, in effect, outputted simultaneously to a multiplicity of subscribers. When the invention is used to display video material (for example), it is necessary that each subscriber transmit the video overlay information in the same predetermined time interval so that it will appear in the proper position on each subscriber's video screen. Thus, each subscriber's computer must process the user specific information and output the information simultaneously. Claim 21, which is similar to claim 18, specifically calls for the transmission of an instruct-to-process signal and an instruct-to-output signal to the computers. The instruct-to-process signal causes each computer to process the user specific information in accordance with its program (e.g., to calculate a user's stock portfolio), and the instruct-to-output signal causes each computer simultaneously to transmit the processed information to the output device under control of the central control site. [Emphasis added.]

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01686. Based upon their characterization of the invention, it is clear that Harvey *et al.* urged simultaneous processing as a necessary feature of their invention.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The plain language of the claims defines the "instruct-to-process signal." The "instruct-to-process signal" is not limited to a signal transmitted from the program source. In light of arguments made during prosecution, the claim language "to cause each of said computers to process data in accordance with its associated special user application" means that the computers simultaneously process data.

6. "instruct-to-output signal"

This term also appears in claim 1, which is again reproduced below for reference (the disputed term is in boldface):

1. A method of communicating data to a multiplicity of receiver stations, each of which includes a computer adapted to generate and transmit user specific signals to one or more associated output devices, ***, comprising the steps of:

transmitting an instruct-to-process signal ***,

transmitting an **instruct-to-output signal** to said computers at a time when the corresponding user specific information is not being transmitted to an output device,

detecting the presence of said **instruct-to-output signal** at selected receiver stations and coupling said **instruct-to-output signal** to the computers associated with said selected stations, and

causing said last named computers simultaneously to output their user specific signals to their associated output devices in response to **said instruct-to-output signal**, thereby to transmit to the selected output devices an output signal comprising said data and said related user specific signals, the output signals at a multiplicity of said output devices being different, with each output signal specific to a specific user.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

A signal, from a source at a location other than the receiver station, that instructs a computer to

DEFENDANTS' PROPOSED CONSTR.

The term "transmitting an instruct-to-output signal" means transmitting a control signal, sepa-

output user specific signals to the associated output devices.

Post-Hearing: [says that no construction is necessary; otherwise same as above]

rate from the instruct-to-process signal, from the program transmission source that causes a subscriber computer to send user specific signals to its associated output devices.

Post-Hearing: A control signal from the program transmission source that instructs subscriber computers to simultaneously output user specific signals to their associated output devices.

Plaintiffs' Harvey II Chart at 11; Defendants' Harvey II Chart at 14; Joint Summary at 9.

According to the defendants, the dispute concerns "whether the 'instruct-to-output' signal (1) causes one or more subscriber computers to locally output user specific signals for simultaneous display/presentation and (2) is transmitted from the program transmission source." The defendants urge that both (1) and (2) are supported by the prosecution history. Defendants' Opening *Markman* Brief at 27-28.

b) Discussion

Once again, there is no dispute that the "instruct-to-output signal" is simply a signal. Again turning to the plain language of the claim, one finds that the claim expressly specifies (1) when the disputed signal is transmitted ("transmitting an instruct-to-output signal * * * at a time when the corresponding user specific information is not being transmitted to an output device"), (2) what the disputed signal is transmitted to ("transmitting an instruct-to-output signal to said computers;" "detecting the presence of said instruct-to-output signal at selected receiver stations"), (3) what is to be done with the disputed signal ("coupling said instruct-to-output signal to the computers associated with said selected stations"), and (4) what the disputed signal does ("causing said last named computers simultaneously to output their user specific signals to their associated output devices in response to said instruct-to-output signal").

Thus, with respect to the defendants' proposed limitation that the "instruct-to-output signal" "instructs subscriber computers to simultaneously output user specific signals to their associated output devices," the express language of the claim unambiguously calls for that. Although no recourse to intrinsic evidence is therefore needed to resolve the issue, Harvey *et al.* urged during

prosecution that the computers simultaneously output user specific signals, as the defendants point out:

[E]ach of a multiplicity of separate jobs must be processed simultaneously and, in effect, outputted simultaneously to a multiplicity of subscribers. * * * [I]t is necessary that each subscriber transmit the video overlay information in the same predetermined time interval so that it will appear in the proper position on each subscriber's video screen. Thus, each subscriber's computer must process the user specific information and output the information simultaneously. Claim 21 * * * specifically calls for the transmission of an instruct-to-process signal * * * [which] causes each computer simultaneously to transmit the processed information to the output device * *. [Emphasis added.]

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01686.

The defendants also urge, however, that the disputed signal must be "from the program transmission source." As discussed above in connection with other disputed signals, the claims do not require that, nor does the specification or prosecution history. The defendants primarily rely, as before, on Harvey *et al.*'s statement that the computers are "under the control of the central control site." See Defendants' Post-Hearing *Markman* Brief at 6. However, also as discussed above, there is nothing in the specification or prosecution history to the effect that such a "central control site" must necessarily be the program transmission source. The defendants' proposed limitation must thus be rejected.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The plain language of the claims defines the "instruct-to-output signal." The "instruct-to-output signal" is not limited to a signal transmitted from the program source.

7. "instruct-to-transmit signal"

The disputed term appears in asserted claim 3, reproduced below with the disputed term in boldface:

3. A method of communicating data to a multiplicity of receiver stations each of which includes a computer adapted to generate and transmit user specific signals to one or more associated output devices, ***, comprising the steps of:

transmitting an instruct-to-transmit signal to said computers at a time when the corresponding user specific information is not being transmitted to an output device,

detecting the presence of said instruct-to-transmit signal at selected receiver stations and coupling said instruct-to-transmit signal to the computers associated with said selected stations, and

causing said last named computers to generate and transmit their user specific signals to their associated output devices in response to said instruct-to-transmit signal, thereby to transmit to the selected output devices an output signal comprising said data and said related user specific signals, the output signals at a multiplicity of said output devices being different, with each output signal specific to a specific user.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

A signal, from a source at a location other than the receiver station, that instructs the computers to generate and transmit user specific information to the associated output devices.

Post-Hearing: [says no construction is needed; otherwise, same as above]

DEFENDANTS' PROPOSED CONSTR.

A control signal transmitted from the program transmission source that causes a subscriber computer to locally generate and send user specific signals to its associated output device for display/presentation to a user at that subscriber receiver station only, at a time coordinated with the communication of data to all subscribers.

Post-Hearing: A control signal transmitted from the program transmission source that instructs subscriber computers to simultaneously generate and transmit user specific information to their associated output devices.

Plaintiffs' Harvey II Chart at 10; Defendants' Harvey II Chart at 19; Joint Summary at 10.

The defendants urge that the dispute concerns "whether the 'instruction-to-transmit signal' (1) causes the user specific signals to be displayed/presented to a user at that subscriber station only, at a time coordinated with the communication of all data to all subscribers and (2) is transmitted from the program transmission source (rather than merely any source other than at the receiver station)." The defendants contend that both are required by the intrinsic evidence, and that it is clear from the claim that the "instruct-to-transmit signal" causes the subscriber computers to generate and transmit their user specific signals to their "associated output devices." The defendants also urge that the prosecution history is clear that "this invention generates and outputs (displays) information specific to each of a multiplicity of subscribers (with no other subscriber having access to the information), the user specific information being coordinated with program material transmitted to all subscribers." According to the defendants, "the specification discloses only instruction signals that originate from the program source." Defendants' Opening *Markman* Brief at 29-30.

The plaintiffs reply that the "[d]efendants' complicated definition includes additional limitations which they liberally take from statements in the prosecution history, without any analysis of how they are relevant. The statements in the file history relied on by Defendants * * * provide that the claim, *as applied to Girault's video-based system*, would still distinguish that [prior art] reference as explained. Those statements do not mean that the claim at large is limited to a video-based system, and that all other embodiments corresponding to that claim have been disclaimed." [Plaintiffs' emphasis.] Plaintiffs' Reply Brief at 8.

b) Discussion

Again, the "instruct-to-transmit signal" is simply a signal. As before, the plain language of the claim calls for (1) when the disputed signal is transmitted ("transmitting an instruct-to-transmit signal * * * at a time when the corresponding user specific information is not being transmitted to an output device"), (2) what the disputed signals are sent to ("transmitting an instruct-to-transmit signal to said computers;" "detecting the presence of said instruct-to-transmit signal at selected receiver stations"), (3) what is to be done with the disputed signal ("coupling said instruct-to-transmit signal to the computers associated with said selected stations"), and (4) what the disputed signal does ("causing said last named computers to generate and transmit their user specific signals to their associated output devices in response to said instruct-to-transmit signal").

The defendants again propose that the "instruct-to-transmit signal" must be from the program transmission source. As extensively discussed previously in connection with other disputed "instruct-to-* * *" signals, nothing in the claims or intrinsic record requires that.

However, the defendants' proposed construction that the disputed signal "instructs subscriber computers to simultaneously generate and transmit user specific information to their associated output devices" is more persuasive. Claim 3 does not expressly call for anything to be "simultaneous." Claim 3 does call, however, for "causing said last named computers to generate and transmit their user specific signals to their associated output devices in response to said instruct-to-transmit signal." During prosecution, Harvey *et al.* argued that "claim 18 [predecessor to claim 3] distinguishes over the cited art in requiring the transmission of an instruct to transmit signal to all of the computers in the system, which means that all computers are under a common control, and then causing the computers to generate and transmit their user specific signals to their associated output devices." [Emphasis added.] Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01685. Also, as noted above, Harvey *et al.* argued that the computers must all process, or generate, and output their signals at the same time:

As explained above, in applicants' invention, each of a multiplicity of computers is controlled by instructions from one central control site and caused to generate and transmit information specific to a single user coordinated with the program material from the central site. This means that each of a multiplicity of separate jobs must be processed simultaneously and, in effect, outputted simultaneously to a multiplicity of subscribers. [Emphasis added.]

Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01686.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The plain language of the claims defines the "instruct-to-transmit signal." The "instruct-to-transmit signal" is not limited to a signal transmitted from the program source. In light of arguments made during prosecution, the claims require that the "instruct-to-transmit signal" cause the computers simultaneously to generate and transmit their user specific signals to their associated output device.

VI.
Harvey III

A. Disclosure

Harvey III is also entitled "Signal Processing Apparatus and Method." Harvey III is a continuation-in-part of Harvey II, was filed on September 11, 1987, and issued on October 23, 1990. Harvey III is a rather lengthy patent – the specification and claims fill some 312 columns – directed to, as the abstract explains:

A unified system of programming communication for use on individual computer systems with capacity for generating relevant user specific information simultaneously at each station of a plurality of subscriber stations. The system includes a transmission station which is a central control system of a system of receiver station computers controlled by the station transmission. Each individual computer system is self-structuring in that any given transmission station can transmit control information causing selected apparatus at selected receiver stations to combine the computers at those stations based on the transmission of the station, thereby causing the individual computers to come under control of station. The unified system also includes apparatus for combining the user specific information generated at subscriber station into broadcast programming, so that broadcast programming is displayed at every station with user specific information displayed in the broadcast programming. The unified system includes apparatus for restricting the combined programming so that it is available only at selected stations tuned to a given transmission station's transmission. The unified system includes apparatus for documenting the use of the control signals and/or programming at said selected stations and for monitoring the availability and use, of programming.

Harvey III describes the invention in the context of several examples, including examples regarding "Wall Street Week" with personalized stock portfolios, *see Harvey III, col. 11, line 62 et seq.*, an "Exotic Meals of India" cooking show in which recipes and shopping lists may be generated and printed, *see Harvey III, col. 260, line 51 et seq.*, television commercials individually customized to show (and print coupons for), for example, what a potential customer calculated to be within the vicinity of a particular supermarket could save if 500 pork bellies were purchased from that market, *see Harvey III, col. 269, line 15 et seq.*, ordering and having the ingredients for a recipe from the "Exotic Meals of India" show, e.g., for a low-salt Vindaloo dish, delivered to a residence for that dish's preparation at a particular time, *see Harvey III, col. 279, line 15 et seq.*, and a rather broad and sweep-

ing scheme for simultaneous coordination of farmers' crops in multiple European countries while considering national and local tax rates, interest rates, farm soil conditions, history of crop rotation, farm equipment availability, depreciation schedules, business advertisements and sales to farmers, employment subsidy formulas, crop growing methods, insect infestation, etc. all coordinating the European community, national and local governments, farmers, and other interested parties. *See* Harvey III, col. 295, line 53 *et seq.* Given its extensive disclosure, Harvey III's technical aspects are discussed below as required for claim construction.

B. Summary of the Substantive Prosecution History

1. Original Application – September 11, 1987

Harvey *et al.* filed application Ser. No. 96,096 on September 11, 1987, as a CIP of the application maturing into Harvey II. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01230, -01238. That application was apparently filed with 38 claims (deduced from later office actions), none of which appear to have been included as part of the *Markman* record.

2. First Office Action – November 9, 1988

In an office action of November 9, 1988, the examiner objected to Harvey *et al.*'s abstract as too long, and, noting that the specification was lengthy, asked for Harvey *et al.*'s help in checking for minor errors. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01250. Substantively, the examiner rejected all of the claims under § 103, and some of the claims for obviousness-type double patenting over Harvey II, as discussed below.

a) § 103: Claims 1-4, 10-13, 15, 17 & 19

The examiner rejected claims 1-4, 10-13, 15, 17 and 19 "under 35 U.S.C. 103 as being unpatentable over Crosby or [U.S. Patent No. 4,025,851 to] Haselwood *et al.* ['Haselwood *et al.*']."²¹ *Id.* at

²¹ Haselwood *et al.*, entitled "Automatic Monitor For Programs Broadcast," explain in their abstract:

A system for automatically monitoring the programs broadcast by network affiliated broadcasting stations includes a plurality of remote monitoring sites and a central office for periodically interrogating the remote monitoring sites. Each remote monitoring site contains apparatus for monitoring time varying program identifying data, and for storing the data in a change format when the time varying

PID01251. According to the examiner, “[e]ach of Crosby or Haselwood describe the detection of an embedded signal which actuates a recorder. It is deemed obvious that remote site in the context used by the applicants is simply another independent signal processing means. Each of the above transmit the processed data to an independent recorder which is then checked by the user of the service such as the advertiser.” *Id.*

b) § 103: Claims 1-38

The examiner then rejected claims 1-38 “under 35 U.S.C. 103 as being unpatentable over [U.S. Patent No. 4,323,922 to] de[n] Toonder *et al.* [‘den Toonder *et al.*’].” *Id.* According to the examiner, “de[n] Toonder et al show an embedded signal which controls the decoding of a program (See Col. 2, lines 25-40).²² The on-off signal is a instruct a user specific key. [Sic] It is obvious that such is within the bounds of the claimed invention because of the above claim constructions.” *Id.*

c) Obviousness-Type Double Patenting: Claims 21-38

Finally, the examiner rejected claims 21-38 “under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the prior invention as set forth in claims 1-5 of [Harvey II].” *Id.* According to the examiner, “[a]lthough the conflicting claims are not identical, they are not patentably distinct from each other because the instruct to generate is the functional equivalent of the instruct to process of the patent and no clear line exists between the two cases.”

data changes in an unexpected manner. An elapsed time clock in each remote monitoring unit generates a record of the elapsed time between the unexpected changes. Each remote unit includes a mini-computer having a read-only memory and a random-access memory. The data in the read-only memory serves to establish communications with the central office and permits the central office to access the random-access memory. After the random-access memory has been accessed, it may be reprogrammed to alter the operation of the remote monitoring unit to accommodate different data formats or different information.

²² den Toonder *et al.*, entitled “Television Coding System With Channel Level Identification,” explain in their abstract:

A converter/decoder for use in subscription television includes means for converting any input TV channel to a predetermined output channel. Decoding means are connected to the converter at its output for decoding the selected output channel. The decoder is enabled in response to data carried on the TV signal which describes the program level of the particular selected channel. The means for enabling the decoder includes a comparison circuit which compares the television signal program level data with authorization data and performs an enabling function when there is correspondence between the two data entries. The authorization data may be received by the converter/decoder simultaneously with the program level data, but at a frequency other than that of the television signal, for example, at a frequency in the FM band.

Id. The examiner explained that “[a] timely filed terminal disclaimer in compliance with 37 CFR 1.321(b) would overcome an actual or provisional rejection on this ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.78(d).” *Id.* at PID01251-52.

3. First Amendment – May 9, 1989

In response, Harvey *et al.* promised that “[f]ormal drawings will be submitted when the case is in a condition for allowance,” provided a substitute abstract, and said they would continue to review the specification.” *See* Plaintiffs’ Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01286-87.

a) To the Claims

Harvey *et al.* stated that they had “cancelled claim 38 and amended claims 1, 2 and 10 to clarify them.” *Id.* at PID01287. According to Harvey *et al.*:

Applicants do not believe that the amendment alters the scope of those claims. Applicants have also submitted new claims 39 [through] 92 which more particularly define the invention over the prior art. Claims 59 and 73 are independent. The new claims are generally similar in scope to pending claim 28. Applicants do not believe that the addition of the new claims will require an additional search. Applicants firmly believe that claims as presently presented in the application are patentable of [*sic*] the prior art of record.

Id.

b) Applicants’ Remarks

(1) Regarding Claims 1-4, 12-13, 15, 17 & 19 (§ 103)

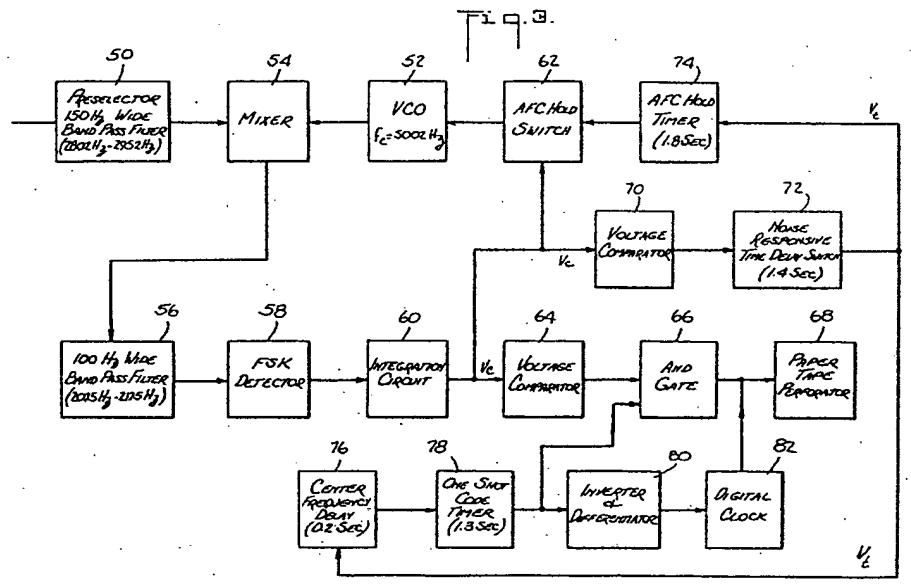
Harvey *et al.* first recounted their understanding of the examiner’s rejection:

The examiner contends that either Crosby or Haselwood describe the detection of an embedded signal which actuates a recorder. The examiner contends it to be obvious to employ applicants’ structure at a remote site using the single processing means disclosed by Haselwood or Crosby. The examiner further contends that either Crosby or Haselwood transmit the processed data to an independent recorder which is then checked by the user of the service.

Id. at PID01287-88.

Harvey *et al.* urged that the examiner had "improperly construed the disclosures of Crosby and Haselwood." Harvey *et al.* urged their understanding of Crosby:

Crosby discloses a communication transmission including a so-called submerged identification signal. The submerged signal is placed in a short-time period, narrow bandwidth window of the program in its audio sub-carrier of a broadcast program. The Crosby receiver equipment automatically responds to the presence of [the] sub-carrier to detect any coded identification signals therein. In Crosby, an unmodulated sub-carrier is transmitted immediately prior to code modulation to assure no ambiguity between code signal and program content. In Crosby, the decoders shown in Figure 3 responds directly to mark frequency and space frequency provided in the signal. [Crosby's Fig. 3 reproduced below for reference.]



Crosby states that the mark condition must be constant and repeated so that the programmed space for the identification signal can be detected. Crosby disclosed in Figure 3 detection of a [sic] identification signal and recording that signal. However, Crosby does not disclose that the signal activates or deactivates equipment external to the signal processor itself. Crosby merely records the presence or absence of the identification signal.

Id. at PID01288.

Harvey *et al.* also urged their understanding of Haselwood *et al.*:

Haselwood discloses a system for automatically monitoring programs broadcasted by network affiliate broadcasting stations. Haselwood's system including a plurality of remote monitoring sites and a central office for periodically interrogating the remote sites. The Haselwood system monitors the program identifying data and stores the data in a changed format when the time-varying data changes in an unexpected manner. A lapse clock at the remote site [sic] generates a record of lapse-time between the unexpected changes.

Id. at PID01288-89.

Harvey *et al.* then distinguished Crosby and Haselwood *et al.*, contending that “[b]oth Haselwood and Crosby merely record detected signals. Neither Haselwood nor Crosby has no [sic, ‘any’] disclosure regarding the activation or deactivation equipment external to their signal processor system. Neither Crosby nor Haselwood has any disclosure regarding a control means activated by the detected signal to monitor the performance or output of the first control means for the simple reason that there is no such first control means of the referenced patents. Thus, Crosby and Haselwood are irrelevant to claim 1.” *Id.* at PID01289.

Furthermore, Harvey *et al.* argued, “neither Crosby nor Haselwood disclose anything regarding detection of signals at predetermined time intervals and demodulation of the signals in conjunction with the control means responsive to activate external equipment. Thus, Crosby and Haselwood are not relevant to claims 2, 3 and 4. Neither Crosby nor Haselwood disclose anything regarding the use of a detected signal to pass an instruction to a computer equipment. Thus, Crosby and Haselwood are irrelevant to claim 10. Applicants believe that Crosby and Haselwood do not suggest or render their invention obvious.” *Id.* at PID01289-90 (case citations omitted).

c) Regarding Claims 1-38 (§ 103)

Harvey *et al.* again began their remarks regarding claims 1-38 with their understanding of the examiner's rejection:

The examiner contends that den Toonder discloses an embedded signal which controls the decoding of a program. In the examiner's view, den Toonder discloses an on/off signal which is an instruction to a user specific key at a remote site. In the examiner's view, den Toonder makes obvious within the bounds of

the claimed invention both (a) providing signals to activate and deactivate equipment and (2) providing instructions to other computer equipment to generate computer related information.

Id. at PID01290.

According to Harvey *et al.*, the examiner had "misconstrued the den Toonder disclosure and its applicability to the claims at issue." Harvey *et al.* urged that "[den] Toonder discloses a system for operation of a CATV system through which a cable operator provides a control signals [sic] to each individual subscriber." *Id.* In particular, Harvey *et al.* argued, "[t]he control signals in den Toonder include a tag on a TV program which is compared to program authorization information inserted as a control signal in microprocessor 62. If the TV program tag matches the authorization information in the processor, den Toonder allows the viewer to see a particular program. The authorization information is programmed in the microprocessor through an insertion mechanism controlled by the cable operator. Thus, when the tag on the TV program matches the authorization information inserted by the operator, a descrambling circuit is enabled." *Id.* at PID01290-91.

With regard to claims 1-20, Harvey *et al.* argued that "den Toonder discloses no monitoring means to detect the activation of the descrambler network. Den Toonder provides no suggestion that such monitoring would be appropriate. * * * * Additionally, den Toonder discloses no recorder means for collecting monitoring data. Den Toonder provides no control means for directing any information to a remote site. Den Toonder provides no apparatus for timing the receipt of data or its transmission to other parts of the system. Den Toonder includes no buffer means for organizing signals or any of the other elements that are claimed in applicants' claims 1-20." *Id.* at PID01291 (case citations omitted).

Furthermore, with respect to claims 21-37, Harvey *et al.* urged that "[d]en Toonder also provides no disclosure that an instruction to a computer at a remote site to generate any particular information. [Sic] Applicants do not consider the den Toonder patent relevant to claims 21-37. Applicants respectfully traverse the den Toonder rejection and request the examiner to find the claims as amended allowable over the prior art." *Id.*

d) Regarding Claims 21-38 (Obviousness-Type Double Patenting)

Harvey *et al.* recounted the examiner's obviousness-type double patenting rejection, and urged that “[t]he subject application and the Harvey '725' patent are commonly owned. Applicants will properly demonstrate the common ownership upon allowance of the subject claims. Applicants are willing to file a terminal disclaimer to remove this rejection from the case.” *Id.* at PID01291-92.

4. Second Office Action – July 27, 1989

a) § 112(2): Claims 1-37 & 39-101

In an office action of July 27, 1989, the examiner rejected application claims 1-37 and 39-101 “under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.” *See* Plaintiffs’ Opening Markman Brief, Apx. F (Vol. 3 of 7) at PID01294. According to the examiner, “[t]aken as a whole the claims recite an undue multiplicity which by virtue of the unreasonable number of claims presented tends to obfuscate and confuse the claimed invention. Because the examiner believes that a more reasonable number of claims, for example twenty-five in number, is sufficient to define the invention, the applicants are required to select no more than 25 for examination by the Office. (See M.P.E.P. 706.03(1)).” *Id.*

b) Obviousness-Type Double Patenting: Claims 21-37

Additionally, the examiner again rejected claims 21-37 (claim 38 had been cancelled) “under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the prior invention as set forth in claim 1-5 of U.S. Patent No. 4,704,725. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the reasons of record stated in paragraph 7 of the Office Action dated 11/9/88.” *Id.* The examiner again noted that a “timely filed terminal disclaimer in compliance with 37 CFR 1.321(b) would overcome an actual or provisional rejection on this ground provided that conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.78(d).” *Id.*

5. Second Amendment – January 29, 1990

a) To the Claims

In response, Harvey *et al.* cancelled claims 10 and 21-27, replaced claim 28, cancelled claims 29-58, replaced claim 59, cancelled claims 60-72, replaced claim 73, cancelled claims 74-101, and added new claims 102-104. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01299-1303.

b) Applicants' Remarks

(1) Regarding Claims 1-37 & 39-101 (§ 112(2)).

According to Harvey *et al.*, “[t]he examiner contends that the claims taken as a whole recite an undue multiplicity by virtue of the unreasonable number of claims. Although the applicants believe that 101 claims are not an unreasonable number in light of the scope of the invention, the 25 claims set forth above have been selected. Applicants request that the examiner give consideration to allowing 20 additional claims to be presented in the case so that the true scope of the invention may be reviewed. See, M.P.E.P. 706.03(1).” *Id.* at PID01303.

(2) Regarding Claims 21-37 (Obviousness-Type Double Patenting)

Harvey *et al.* noted that of those claims rejected by the examiner for obviousness-type double patenting, “only claim 28 remains in the case.” *Id.* at PID01304. Harvey *et al.* acknowledged that “the examiner contends that the instruct-to-generate signal is the functional equivalent of instruct-to-process signal in the Harvey '725 patent and that no clear line exists between the two signals. Applicants respectfully traverse this rejection and would point out to the examiner that the instruct-to-generate signal found in claim 28 and its subordinate claims are patentably distinct from the instruct-to-output signal as set forth in claims 1-5 of the Harvey '725 patent and vice versa.” *Id.*

Harvey *et al.* explained their position regarding the “instruct-to-* * *” signals at issue:

In particular, the instruct-to-generate signal causes the receiver station computer to generate user specific output information in accordance with (1) preprogrammed information at the subscriber site or (2) a process modification control signal. Based on either downloading programming from some host computer or

the selection of a program at the receiver site, the instruct-to-generate signal causes the receiver to generate user specific information for that particular receiver site, using either the program selected at the site or a modification control signal.

The instruct-to-output signal instructs the computer to output a signal at a time when the computer is not transmitting its output signal. In the instruct-to-generate claims, no instruct-to-output signal is even required. Applicants submit that claims 28,102, 103 and 104, presented in this amendment, are patentably distinct from claims 1-5 of the Harvey '725 patent and that the obviousness-type double patenting rejection is unwarranted in this case. See, *In re Longi*, 759 F.2d 887, 225 U.S.P.Q. 645 (Fed. Cir. 1985).

Id. at PID01304-5.

6. Notice of Allowability – March 29, 1990

Apparently persuaded, the examiner issued a Notice of Allowability on March 29, 1990. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01308.

7. Issued Independent Claims

Harvey III issued with 25 claims, of which claims 1-5, 14, 20, 24 and 25 are independent. Of those independent claims, apparently only 14, 20, 24 and 25 contain disputed terms. Those latter claims are reproduced below for reference:

14. A method of processing signals including:
 - (a) the step of receiving a carrier transmission;
 - (b) the step of demodulating said carrier transmission to detect an information transmission thereon;
 - (c) the step of detecting and identifying embedded signals on said information transmission;
 - (d) the step of passing said embedded signals to a device or devices to be controlled based on instructions identified within said embedded signals;
 - (e) the step of controlling said devices based on the instructions within said embedded signals; and

(f) the step of recording the receipt of and passing to said devices of said embedded signals.

20. A method of generating computer output at a multiplicity of receiver stations each of which includes a computer adapted to generate and transmit user specific signals to one or more associated output devices, with at least some of said computers being programmed to process modification control signals so as to modify said computers' method of processing data and generating output information content, each of said computers being programmed to accommodate a special user application, comprising the steps of:

transmitting an instruct-to-generate signal to said computers at a time when corresponding user specific output information content does not exist,

detecting the presence of said instruct-to-generate signal at selected receiver stations and coupling said instruct-to-generate signal to the computers associated with said selected stations, and

causing said last named computer to generate their user specific output information content in response to said instruct-to-generate signal, thereby to transmit to each of their associated output devices an output signal comprising the user specific output information content and the user specific signal of its associated computer, the output signals at a multiplicity of said output devices being different, with each output signal specific to a specific user.

24. In a method of generating computer output at a multiplicity of receiver stations each of which includes a computer adapted to generate and transmit user specific output information content and user specific signals to one or more associated output devices, with at least some of said computers being programmed to process modification control signals so as to modify said computers' method of processing data and generating output information content, each of said computers, being programmed to accommodate a special user application, the steps of:

transmitting an instruct-to-generate signal to said computers at a time when corresponding user specific output information content does not exist, and

causing said last named computers to generate their user specific output information content in response to said instruct-to-generate signal, thereby to transmit to each of their associated output devices an output signal comprising the user specific output information content and the user specific signal of its associated computer, the output signals at a multiplicity of said output devices being different, with each output signal specific to a specific user.

25. In a method of generating computer output at a multiplicity of receiver stations each of which includes a computer adapted to generate and transmit user

specific output information content and user specific signals to one or more associated output devices, with at least some of said computers being programmed to process modification control signals so as to modify said computers' method of processing data and generating output information content, each of said computers being programmed to accommodate a special user application, the steps of:

detecting at selected receiver stations the presence of an instruct-to-generate signal transmitted by a transmission source and coupling said instruct-to-generate signal to the computers associated with said selected stations, and

causing said last named computers to generate their user specific output information content in response to said instruct-to-generate signal, thereby to transmit to each of their associated output devices an output signal comprising the user specific output information content and the user specific signal of its associated computer, the output signals at a multiplicity of said output devices being different, with each output signal specific to a specific user.

C. Agreed Terms

The parties agree that the following terms require no construction: (1) "generate and transmit user specific signals to one or more associated output devices," *see* Joint Summary at 60 and n.79, (2) "output devices at a multiplicity of said output devices being different," Joint Summary at 61 and n.81, (3) "information transmission," *see* JCCS at 2, (4) "passing said embedded signals to a device or devices to be controlled based on instructions identified within said embedded signals," *see* JCCS at 3, and (5) "processing data and generating output information," *see id.*

D. Disputed Terms

As noted above, Harvey III derives priority from Harvey I. The parties apparently dispute – but only broadly – what parts of Harvey III are entitled to that earlier filing date. Generally, though, construction of the disputed terms does not appear to hinge on whether certain parts of Harvey III have the priority date of Harvey I. Accordingly, reference to the specification below is made solely with reference to Harvey III, unless reference to Harvey I or its (and subsequent pre-Harvey III) prosecution history is otherwise required to resolve a dispute. The same applies to Harvey IV, V, VI and VII, which are discussed separately below.

1. "embedded signals"

The disputed term appears in asserted claims 14 and 15. Claim 15 depends from claim 14; thus, claim 14 has been selected as representative, and is reproduced below for reference, with the disputed term in boldface:

14. A method of processing signals including:

- (a) the step of receiving a carrier transmission;
- (b) the step of demodulating said carrier transmission to detect an information transmission thereon;
- (c) the step of detecting and identifying **embedded signals** on said information transmission;
- (d) the step of passing said **embedded signals** to a device or devices to be controlled based on instructions identified within said **embedded signals**;
- (e) the step of controlling said devices based on the instructions within said **embedded signals**; and
- (f) the step of recording the receipt of and passing to said devices of said **embedded signals**.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

Digital signals transmitted within an information transmission which cannot be inadvertently separated from the information transmission. The information transmission may be an analog or digital transmission.

Post-Hearing: [no change]. Alternatively, based on its plain meaning, the term "embedded signals" should be construed to mean "signals carried on, within, or made an integral part of a transmission."

DEFENDANTS' PROPOSED CONSTR.

Signals carried on (or within) a host programming transmission to which they pertain, such that the signals (1) cannot be inadvertently separated from the information transmission and (2) occur at precise times in the programming and can synchronize the receiving apparatus. 'Embedded signals' excludes signals of a digital television transmission in the form of serial packets of MPEG transport streams labelled with packet identification ("PID") headers. 'Embedded signals' also excludes signals transmitted out-of band, i.e., on a RF signal separate from the frequencies used for the host programming transmission.

Post-Hearing: Signals carried on (enclosed

within or made an integral part of) a specified host information transmission, such that the signals (1) cannot be inadvertently separated from the information transmission and (2) occur at precise times in the programming and can synchronize the receiving apparatus.

"Embedded signals" excludes signals transmitted in a stand-alone stream of serial data packets whose relationship to each other is only determined by subsequent processing utilizing packet identifiers. "Embedded signals" also excludes signals transmitted out-of-band, i.e., on a carrier frequency separate from the carrier frequency of the subject information transmission.

Plaintiffs' Harvey III Chart at 3-4; Defendants' Harvey III Chart at 1-2; Joint Summary at 11.

The parties urge that the construction of "embedded signals" should apply to that term as it appears in claims 14 and 15, and in Harvey VI, claims 16 and 17.

The plaintiffs urge that the parties' positions differ significantly because the defendants exclude "embedded signals" on a digital transmission, include a "precise times" requirement, exclude MPEG transport streams, and exclude out of band transmission. The plaintiffs contend that the specification "broadly discloses embedded signals in digital data transmissions whether they be broadcast print transmissions, digital televisions transmissions, or other digital data transmissions." The plaintiffs further urge that the "precise times" feature is "merely an aspect of a preferred implementation of embedded signals that are used to synchronize different receiver station apparatus," and that the defendants' MPEG "stream of packets" is "nothing more than an improper attempt to exclude the accused device from the definition of this term." Finally, the plaintiffs contend that the claims do not distinguish between "in-band" and "out-of-band" information transmissions. Plaintiffs' Opening *Markman* Brief at 13-17.

According to the defendants, the patentees acted as their own lexicographer by stating that "[e]mbedded signals provide several advantages. They cannot become separated inadvertently from the programming and, thereby, inhibit automatic proc[e]ssing. They occur at precise times in programming and can synchronize the operation of receiver station apparatus to the timing of pro-

gramming transmissions.” According to the defendants, PMC omits the second part of that definition, and is wrong because the location and the timing of a signal can vary in a predictable manner, and therefore still occur at a precise location or time in the programming. According to the defendants, “[s]erial data packets utilizing packet identifiers arrive in an unpredictable order with unpredictable timing, and therefore are not ‘embedded signals’ as required by the claims.” The defendants urge that “[s]ignals transmitted out-of-band, i.e., on a carrier frequency separate from the subject programming transmission, by definition, cannot be embedded because such signals are transmitted on a carrier frequency separate from the carrier frequency of the subject information transmission.” Defendants’ Opening *Markman* Brief at 31-33.

b) Discussion

As always, the effort turns first to determining the customary meaning of “embedded signals,” if there is any. There is no dispute that the “embedded signal” is a signal – both parties use the word “signal” in their proposed constructions. Rather, the dispute concerns the meaning of “embedded,” and therefore what an “embedded signal” is.

The parties have provided much the same dictionary definitions in urging the meaning of “embedded.” For example, according to WEBSTER’S THIRD NEW INT’L DICTIONARY 739 (1981), “embed” means “to enclose closely in or as if in a matrix <pebbles *embedded* in silt> * * * “to introduce as an integral part.” Another source, the MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS 538 (3rd ed. 1984), defines that word as “to enclose in a matrix” or “to closely surround.” The definition of “embed” is unchanged today. See MERRIAM-WEBSTER’S ONLINE DICTIONARY, <http://www.m-w.com> (last visited May 14, 2004); MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS 713 (6th ed. 2003).

Thus, in the context of the claim language, namely, “identifying embedded signals on said information transmission,” “embedded signals” are signals that are enclosed within or made an integral part of a transmission. See *Brookhill-Wilk* 1, 334 F.3d at 1300 (“While dictionaries and treatises are used for resources in determining the ordinary and customary meaning or meanings of disputed claim terms, the correct meaning of a word or phrase is informed only by considering the surrounding text.”).

Turning to the specification to confirm whether that construction is consistent with the description of the invention, see *Combined Systems, Inc. v. Defense Tech. Corp. of Am.*, 350 F.3d 1207, 1215 (Fed. Cir. 2003) (“As we have recently stated, ‘[t]he written description must be examined in every case, because it is relevant not only to aid in the claim construction analysis, but also to determine if the presumption of ordinary and customary meaning is rebutted.’” (quoting *Brookhill-Wilk* I, 334 F.3d at 1298)), the section entitled “Summary of the Invention” explains:

The present invention employs signals embedded in programming. Embedded signals provide several advantages. They cannot become separated inadvertently from the programming and, thereby, inhibit automatic processing. They occur at precise times in programming and can synchronize the operation of receiver station apparatus to the timing of programming transmissions. They can be conveniently monitored.

In the present invention, the embedded signals contain digital information that may include addresses of specific receiver apparatus controlled by the signals and instructions that identify particular functions the signals cause addressed apparatus to perform.

Harvey III, col. 8, lines 5-17. The defendants urge that the foregoing excerpt is definitional, and that “embedded signals,” by definition, “(1) cannot be inadvertently separated from the information transmission and (2) occur at precise times in the programming.” Defendants’ Post-Hearing *Markman* Brief at 10. The plaintiffs, on the other hand, urge that the statement of “several advantages” is just that, and is not a definition. Plaintiffs’ Post-Hearing *Markman* Brief at 4-5. The plaintiffs agree, however, that “embedded signals” cannot be inadvertently separated from the information transmission – not because that limitation is listed among the “several advantages,” but because that is an inherent characteristic of the invention. *See id.*

The Federal Circuit, of course, has emphasized that claims are not limited to the objects, features, or advantages described in the specification. See, e.g., *Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1332 (Fed. Cir. 2004) (“The patentees were not required to include within each of their claims all of these advantages or features described as significant or important in the written description.”); *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1370 (Fed. Cir. 2003) (“An invention may possess a number of advantages or purposes, and there is no requirement that every claim directed to that invention be limited to encompass all of them.”). Nevertheless, the special master agrees

with the parties that an "embedded signal" is a signal that cannot be inadvertently separated from the information transmission. That limitation flows from the meaning of "embedded," i.e., that is the inherent connotation of "made an integral part of."

The primary dispute addressed in the parties' post-hearing briefs, though, regards Harvey *et al*'s description of another "advantage" of "embedded signals," namely, that "[t]hey occur at precise times in programming and can synchronize the operation of receiver station apparatus to the timing of programming transmissions." The defendants urge that "advantage" is part of the patentees' definition and therefore acts as a limitation. The plaintiffs, however, point to an example in the specification that does not require that "advantage."

First, though, the plaintiffs agree that the "Wall Street Week" embodiment, which is described at Harvey III, col. 11, line 62 to col. 16, line 3, requires precise timing and synchronization. In that embodiment, the host says "And here is what your portfolio did," and "[a]t this point, an instruction signal is generated at said program originating studio, embedded in the programming transmission, and transmitted. * * * Said signal instructs microcomputer, 205, at the PC-MicroKey 1300 to overlay the graphic information in its graphics card onto the received composite video information and transmit the combined information to TV monitor, 202M. TV monitor, 202M, then displays the image shown in FIG. 1C which is the microcomputer generated graphic of the subscriber's own portfolio performance overlaid on the studio generated graphic." *Id.* at col. 14, line 58 to col. 15, line 5. Thus, precise timing of the "embedded signals" is required to display an overlay as the host reaches the appropriate point in the program. Furthermore, the "Wall Street Week" embodiment describes the subscribers watching the program as simultaneously seeing "his own specific performance information as it relates to the performance information of the market as a whole." Harvey III, col. 15, lines 10-23. Therefore, synchronization is required of the "embedded signals" in that example. Furthermore, claim 14 clearly covers the activity of the "Wall Street Week" example.

According to the plaintiffs, though, the "Monitoring Receiver Station Reception And Operation" example, which spans Harvey III, col. 174, line 16 to col. 180, line 33, requires neither precise timing nor synchronization. That example, Harvey *et al* explain, "exemplifies one embodiment of a subscriber station that is preconfigured and preprogrammed to collect monitor information." *Id.* at

col. 174, lines 19-21. More specifically, in that embodiment a SPAM²³ message containing "meter-monitor information"²⁴ is embedded in a program transmission to "facilitate the collection of statistics that identify not only what programming is received and displayed at given subscriber stations but also, for example, which local apparatus receives programming and which displays programming, how received programming is processed, what local apparatus is controlled in the course of processing and how, what locally preprogrammed data is processed by or with the received programming, which local apparatus is caused to transmit programming, etc." *Id.* at col. 174, lines 22-32, col. 175, lines 51-52, 59-60. Harvey *et al.* explain that "[o]ne particular advantage of these methods for monitoring programming is that, by embedding the SPAM information in the audio and/or video and/or other parts of the programming that are conventionally recorded by, for example, conventional video cassette recorders, these methods provide techniques for gathering statistics on what is recorded, for example, on video and audio cassette recorders and on how people replay such recordings." *Id.* at col. 177, line 66 to col. 178, line 6.

For example, a subscriber might instruct video recorder/player, 217, automatically to record the NBC Network Nightly News as broadcast over station WNBC in New York City. Recorder, 217, might receive the programming over Manhattan Cable TV channel and record the programming at the time of original broadcast transmission--from 7:00 PM to 7:30 PM on the evening of July 15,

²³ "The term, 'SPAM,' is used, hereinafter, to refer to signal processing apparatus and methods of the present invention." *Id.* at col. 22, lines 66-68. "The information of SPAM signals includes data, computer program instructions, and commands." *Id.* at col. 23, lines 34-35. *See also id.* at col. 46, line 64 to col. 48, line 6.

²⁴ Harvey *et al.* explain that "[m]eter-monitor segments contain meter information and/or monitor information. Examples of categories of such information include:

- meter instructions that instruct subscriber station meter apparatus to record particular meter-monitor segment information and maintain meter records of said information;
- origins of transmissions (e.g., network source stations, broadcast stations, cable head end stations);
- dates and times;
- unique identifier codes for each program unit (including commercials);
- codes that identify uniquely each combining in a given combined medium program unit;
- codes that identify the subject matter of a program unit;
- unique codes for programming (other than programming identified by program unit codes) whose use obligates users to make payments (e.g., royalties and residuals); and
- unique codes that identify the sources and suppliers of computer data.

Id. at col. 27, lines 47-67.

1985. Each discrete bit of this information could be transmitted to the subscriber station of FIG. 5 in meter-monitor information (of a SPAM command with an appropriate execution segment such as information of the pseudo command) embedded in the transmitted programming. So embedding and transmitting said meter-monitor information would cause recorder, 217, to record said information. *** Subsequently, the subscriber might play back the recorded programming and view said programming on TV monitor, 202M, from 10:45 PM to 11:15 PM the same evening. So playing back and transmitting the recorded programming to monitor, 202M, would cause TV signal decoder, 145, to detect said meter-monitor information and transfer said information, together with appropriate source mark information, to signal processor, 131, causing said signal processor, 200, to record a signal record of said information together with date and time information of said 10:45 PM to 11:15 PM the same evening selected from the clock, 18, of signal processor, 200.

Id. at lines 6-49. In that embodiment, the SPAM signals are the "embedded signals," but do not appear to occur at any particular time, much less a precise time. Harvey *et al.* do not discuss the timing or time of the disputed signals. Although program transmission may arguably occur at a precise time in the program, whether during transmission or on playback, that does not seem to be required by definition. The defendants further urge, though, that even if "the location and timing of a signal can vary in a predictable manner," the signals "still occur at a precise location or time in the programming," Defendants' Post-Hearing *Markman* Brief at 10-11, relying partly on Harvey *et al.*'s explanation that:

It is a further purpose of this invention to provide a variety of means and methods for restricting the use of transmitted communications to only duly authorized subscribers. Such means and methods *** also include techniques whereby the pattern of the composition, timing, and location of embedded signals may vary in such fashions that only receiving apparatus that are preinformed regarding the patterns that obtain at any given time will be able to process the signals correctly.

Harvey III, col. 7, line 62 to col. 8, line 4. The specification suggests, though, that such is only a technique, not a necessary characteristic. It is, of course, possible to place "embedded signals" at precise times or intervals in a program as the defendants urge, but the specification does not require the same. Again, the claims are not limited by the embodiments in the specification. An "embedded signal" is, after all, simply a signal put to use as specified in the claim.

The same may be said for the defendants' proposed "synchronization" limitation. Harvey *et al.* explained that the "embedded signals" "can synchronize the operation of receiver station apparatus * * *," not that they must. [Emphasis added.] That, of course, suggests the use of the disputed signals for synchronization, but not the necessity therefor. The defendants' proposed "precise timing" and "synchronization" limitations must be rejected.

As noted above, however, the defendants have also proposed additional limitations, namely, that the term "embedded signals" excludes (1) signals transmitted in a stand-alone stream of serial data packets whose relationship to each other is only determined by subsequent processing utilizing packet identifiers, and (2) signals transmitted out-of-band, *i.e.*, on a carrier frequency separate from the carrier frequency of the subject information transmission. The defendants urge that "the specification plainly distinguishes between 'embedded signals' and SPAM signals associated with 'broadcast print or data communications' that merely 'accompany' such print or programming," and that packets of bits within a stream of digital data packets are not "embedded signals" because the claim requires a carrier, an information transmission and embedded signals, and "there is no discretely identifiable larger host transmission within which the packets can be said to be 'embedded.'" Defendants' Post-Hearing *Markman* Brief at 11-12. The plaintiffs reply that the defendants misinterpret the specification. See Plaintiffs' Post-Hearing *Markman* Brief at 3-4 n.6.

Turning first to claim 14 with regard to the defendants' second argument, the defendants are correct that the plain language of the claim requires, *inter alia*, (1) a "carrier transmission," (2) an "information transmission thereon [*i.e.*, on the carrier transmission]" and (3) "embedded signals on said information transmission." That is, the "carrier transmission"²⁵ is discrete from the "information transmission," and the "embedded signals" are discrete from, but enclosed within or made an integral part of the "information transmission." Clearly, the "embedded signals" are particularly within the "information transmission," not the "carrier transmission" because the "carrier transmission," according to the claim, requires demodulation to "detect" the "information transmission." Thus, in

²⁵ See, e.g., McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS 335 (6th ed. 2003)(defining "carrier transmission" in the communication field as a "[t]ransmission in which the transmitted electric wave is a wave resulting from the modulation of a single-frequency wave by a modulating wave.").

claim 14, the term “embedded signals” does not include signals that are transmitted out-of-band,²⁶ i.e., signals transmitted on a transmission other than the “information transmission.” That is, although the defendants’ “out-of-band” distinction is not an inherent, or definitional characteristic of the term “embedded signals,” the plain language of claim 14 expressly requires what the defendants propose.

In rebuttal, the plaintiffs point to the specification’s statement that the “embedded signals” may be in audio signals, namely, Harvey III, col. 8, lines 27-19 (“In television and radio they may appear in a portion of the audio range that is not normally rendered in a form audible to the human ear.”), but again, just as the embodiments of the specification do not limit the plain language of the claims, nor do they call for ignoring it. The plaintiffs have not otherwise addressed the claim’s recital of a “carrier transmission,” an “information transmission” and “embedded signals” as three discrete claim elements, and their reference to the specification does not alter what the claim plainly requires.

Turning to the defendants’ argument that the term “embedded signals” excludes signals transmitted in a stand-alone stream of serial data packets whose relationship to each other is only determined by subsequent processing utilizing packet identifiers, presumably, that means that the defendants urge that the “embedded signals” cannot be in a digital data stream. Otherwise, the “serial data packets” or other types of signals are not specifically addressed by the meaning of “embedded signals.” According to the defendants, in column 8, lines 18-41, the patentees explain:

In programming transmissions, given signals may run and repeat, for periods of time, continuously or at regular intervals. Or they may run only occasionally or only once. They may appear in various and varying locations. In television they may appear on one line in the video portion of the transmission such as line 20 of the vertical interval, or on a portion of one line, or on more than one line, and they will probably lie outside the range of the television picture displayed on a

²⁶ See, e.g., FEDERAL STANDARD 1037C, *Glossary of Telecommunication Terms* (1996), <http://www.its.bldrdoc.gov/fs-1037/> (last visited May 13, 2004)(defining “out-of-band signaling” as “[s]ignaling that uses a portion of the channel bandwidth provided by the transmission medium * * *.”); AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS 778 (7th ed. 2000)(defining “out-of-band signaling” in the communications field as “(1) Signaling applications in which the signaling information is outside of the user information channel, whether or not transmitted in a different physical or logical channel from the associated user data, e.g., over different physical paths, in different time-slots in a time division multiplex (TDM) stream. * * * (4) Analog generated signaling that uses the same path as a message and in which the signaling frequencies are lower or higher than those used for the message.”).

normally tuned television set. In television and radio they may appear in a portion of the audio range that is not normally rendered in a form audible to the human ear. In television audio, they are likely to lie between eight and fifteen kilohertz. In broadcast print and data communications transmissions, the signals may accompany conventional print or data programming in the conventional transmission stream but will include instructions that receiver station apparatus are preprogrammed to process that instruct receiver apparatus to separate the signals from the conventional programming and process them differently. In all cases, signals may convey information in discrete words, transmitted at separate times or in separate locations, that receiver apparatus must assemble in order to receive one complete instruction. [Emphasis added.]

Harvey *et al.* initially discuss where the signals are embedded, but then, when discussing "broadcast print and data communications transmission," refer to the "embedded signals" accompanying "conventional print or data programming in the conventional transmission stream." That, according to the defendants, indicates a difference between "embedded signals" and SPAM signals "that merely 'accompany' such print or programming." See Defendants' Post-Hearing *Markman* Brief at 11. The defendants also rely on column 47, lines 41-55 of the specification:

In broadcast print or data communications, the preferred normal transmission location for SPAM signals is in the same location as the conventional information. More precisely, conventional print of data information is transmitted in SPAM transmissions. Any given instance of conventional print or data information is transmitted in a SPAM information segment that is preceded by a "01" header SPAM command or a "11" header, which command or header addresses conventional print or data processing apparatus at subscriber stations and causes said apparatus to process said conventional information in the conventional fashion. In said transmissions, other SPAM commands and information address and control subscriber station apparatus in other SPAM functioning.

However, the specification makes clear that SPAM signals may also be "embedded signals," as the "meter-monitoring" example discussed above indicates. Furthermore, the specification also discloses that SPAM messages may be embedded in digital television transmissions. In a section entitled "Transmitting And Receiving Program Instruction Sets," Harvey *et al.* reiterate that "[i]n television, the normal transmission location is in the vertical interval of the television transmission. SPAM signals are not normally transmitted in the visible portion of the television picture because the information of said signals can be seen by viewers (often as so-called 'snow')."¹⁰ Harvey III, col. 253, lines 55-60. Harvey *et al.* note, though, that "the transmission capacity of the vertical interval is

limited." *Id.* at 60-61. In the situation in which large program instruction sets are transmitted in the SPAM messages for local generation of information, Harvey *et al.* explain that the needed "capacity is found by transmitting said sets in portions of the television picture that are covered by locally generated overlays (which in digital television transmissions can include frames of transmitted video that are 'frozen' after reception in fashions well known in the art)." [Emphasis added.] *Id.* at col. 254, lines 24-29. Harvey *et al.* also provided an example:

An example illustrates transmitting program instruction set information in a portion of the television picture that is normally visible but that is temporarily covered by an overlay. In the example, the program originating studio that originates a given program causes each subscriber station to generate information of the so-called "titles" of said program * * *, causes said locally generated information to overlay and obscure completely the transmitted video information of said program, and transmits program instruction set information in the full field video of the transmission so obscured * * *.

The decoder, 203, of the station * * * is preprogrammed to respond to SPAM messages containing expand-to-full-field-search execution segment information and resume-normal-location-search information and responsively to alter automatically the portions of its received video information that are searched for embedded digital information. [Emphasis added.]

Id. at lines 49-64. Harvey *et al.* therefore contemplated digital transmissions with embedded digital information (of which SPAM messages are included); thus, clearly there is no basis in the specification for excluding "embedded signals" from placement within digital transmissions.

Finally, as for the plaintiffs' contention that "embedded signals" mean digital signals, their expert, Dr. Bovik, certainly was not firm on such a requirement at the *Markman* hearing. *See Markman* Tr. at 128:10-20 ("SPECIAL MASTER PETERSON: And the claims, when you see embedded signals in the claims, you say those are limited to digital signals? THE WITNESS: My understanding is that they are digital signals, although I have not made as careful a study, I have to tell you of that particular point. SPECIAL MASTER PETERSON: All right. THE WITNESS: So you know, it's possible that if I were to go back and reread it, I might change my mind but that's my understanding at this moment."). Indeed, the plaintiffs seem to have dropped that argument altogether in their alternative proposed construction. The asserted claims do not require the "embedded signals" to be

digital, and there is nothing in the meaning of the disputed term itself, nor in the intrinsic record, to require the same.

c) Recommended Construction

In view of the foregoing, the special master recommends that the Court conclude that:

"Embedded signals" are signals that are enclosed within or made an integral part of a transmission.

2. "recording the receipt of and passing to said devices of said embedded signals"

This term appears in claim 14 thus (the term is in boldface):

14. A method of processing signals including:

- (a) the step of receiving a carrier transmission;
- (b) the step of demodulating said carrier transmission * * *;
- (c) the step of detecting and identifying embedded signals * * *;
- (d) the step of passing said embedded signals to a device * * *;
- (e) the step of controlling said devices based on the instructions within said embedded signals; and
- (f) the step of recording the receipt of and passing to said devices of said embedded signals.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

Making and storing a data record reflecting that the embedded signal is received and passed to the device(s) to be controlled.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

An event recording step in which the occurrence of two events is recorded, namely (1) the receipt of embedded signals; and (2) the passing of those signals to devices to be controlled based on the signals. The event recordation step is performed separate from any use or storage of the embedded signal itself in connection with controlling a particular device.

Post-Hearing: [no change]

Plaintiffs' Harvey III Chart at 14; Defendants' Harvey III Chart at 4-5; Joint Summary at 12.

According to the defendants, the dispute concerns "whether mere use or storage of an embedded signal constitutes a record of the receipt and passing of that signal." The defendants contend that it is "clear from the plain claim language" and "the specification clearly demonstrates that the event recordation step is performed separately from the use and storage of the embedded signal." [Defendants' emphasis.] Defendants' Opening *Markman* Brief at 33-34. *See also* *Markman* Tr. at 448:23-451:20.

b) Discussion

Grammatically, the disputed step calls for "the step of recording the [1] receipt of and [2] passing to said devices of said embedded signals." [Numbering added.] That is, the disputed step calls for "the step of recording" the occurrence of two events, namely, (1) the receipt of said embedded signals and (2) the passing to said devices of said embedded signals.

Turning to the other claim limitations, in full, claim 14 calls for:

14. A method of processing signals including:

- (a) the step of receiving a carrier transmission;
- (b) the step of demodulating said carrier transmission to detect an information transmission thereon;
- (c) the step of detecting and identifying embedded signals on said information transmission;
- (d) the step of passing said embedded signals to a device or devices to be controlled based on instructions identified within said embedded signals;
- (e) the step of controlling said devices based on the instructions within said embedded signals; and
- (f) the step of recording the receipt of and passing to said devices of said embedded signals.

In claim 14, the only "receiving" step expressly recited is "the step of receiving a carrier transmission." Otherwise, the claim does not expressly call for receiving embedded signals. The embedded signals are, however, "on said information transmission," which, in turn, is modulated onto the "carrier transmission." The embedded signals are thus effectively received when the carrier transmission is received, even if the transmission requires some processing before the embedded signals are usable. At some point, then, the embedded signals are received, and the "recording step" calls for recording that event. Also, at some point, the embedded signals are passed to a device or devices, and the "recording step" calls for recording that event as well.

Reviewing the structure of claim 14 provides some guidance in resolving whether using or storing the embedded signals constitutes "recording." The steps of claim 14 logically require a certain order, at least for most of the steps. *See Loral Fairchild Corp. v. Sony Corp.*, 181 F.3d 1313, 1322, (Fed. Cir. 1999), *cert. denied*, 120 S. Ct. 789 (2000); *Altiris*, 318 F.3d at 1369-70. That is, step (a), the "step of receiving a carrier transmission," must logically be accomplished prior to step (b), which calls for "the step of demodulating said carrier transmission to detect an information transmission thereon." Step (b), in turn, must logically occur prior to step (c), which calls for "the step of detecting and identifying embedded signals on said information transmission." Step (c) must logically occur before step (d), which calls for "the step of passing said embedded signals to a device * * * to be controlled based on instructions identified within said embedded signals. Step (d) must logically occur prior to step (e), which calls for "the step of controlling said devices based on the instructions within said embedded signals." Step (e), however, does not logically have to occur before step (f), which calls for the disputed "step for recording the receipt of and passing to said devices of said embedded signals."

As noted above, step (f) requires that two items of information be recorded, namely, (1) the receipt of said embedded signals and (2) the passing to said devices of said embedded signals. Obviously, step (f) cannot logically occur before occurrence of the events to be recorded. The structure of the claim thus at least suggests that the recording step is discrete from using or storing the embedded signals.

That construction also finds support in the word "record." The word "record," when used as a verb as in step (f), is customarily understood to mean: "to set down in writing : make a written account or note of : furnish written evidence of : put into written form," "to make an objective lasting indication of in some mechanical or automatic way : register permanently by mechanical means <earthquake shocks recorded by a seismograph>," or "to give evidence of." WEBSTER'S THIRD NEW INT'L DICTIONARY 1898 (1981). *See also* McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS 1762-3 (6th ed. 2003) ("To preserve for later reproduction or reference. *See recording*;" also defining "recording" as "[a]ny process for preserving signals, sounds, data, or other information for future reference or reproduction, such as disk recording, facsimile recording, ink-vapor recording, magnetic tape or wave recording and photographic recording."). Thus, "record" connotes preserving or registering something for later reference.

* * *

That is the sense in which the word "record" is used in the specification. For example, as pointed out by the defendants, the specification discusses collecting and retaining "meter information" for use in billing for television services, Nielsen ratings, and creating statistical data. See Harvey III, col. 48, line 47 to col. 51, line 37. In one example the defendants point to, Harvey *et al.* explain:

In each example, the apparatus of Fig. 3 [added below for reference]:

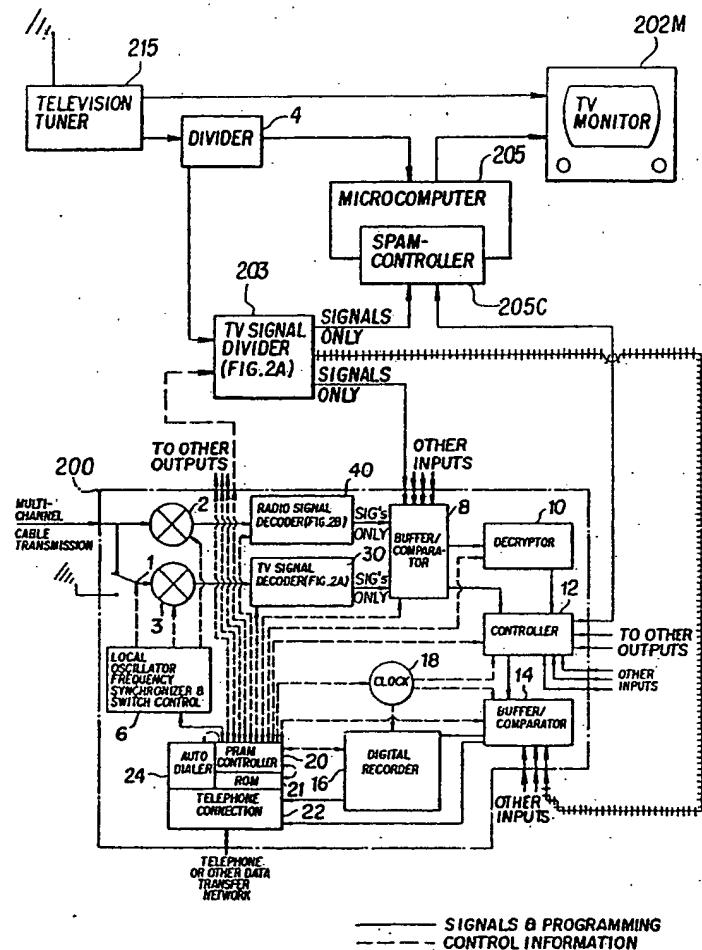


FIG. 3

are preprogrammed to detect embedded signal information, to transfer said information to addressed apparatus, and to operate under control of said information. Apparatus of decoder, 203, are preprogrammed to detect signal information embedded in the normal transmission pattern and to correct, convert, and trans-

fer said information to its addressed apparatus. Apparatus of signal processor, 200, are preprogrammed to decrypt information upon instruction and to transfer information to its addressed apparatus. For one or more remote services that meter and charge subscribers for the use of information or that audit such remote metering services; apparatus of signal processor, 200, are preprogrammed to select, process, and record meter information and to transfer recorded meter information to one or more remote station computers.

Id. at col. 50, lines 35-51.

In claim 14, Harvey *et al.* clearly called for (1) receiving, (2) passing and (3) recording "embedded signals" in separate steps. The act of receiving an electrical signal is a transient event that does not, by itself, serve to record that event. The same may be said for the event of "passing to said devices of said embedded signals." The act of "passing" is also a transient event that does not, by itself, serve to record that event. Thus, Harvey *et al.* provided the further discrete step of "recording" both (1) "the receipt" and (2) the "passing" of the embedded signals. Overall, therefore, the structure of claim 14 and Harvey *et al.*'s use of the word "record" connotes something in addition to "storage" or "use."

It is true, of course, that "storing" a signal or "using" a signal is some indication that such signal was at one time "received" or "passed." But that is not a reasonable interpretation of what claim 14 is directed to. Harvey *et al.* called for "recording * * *," not storing or using. The resulting "record" is about the events of (1) "the receipt of * * * said embedded signals" and (2) the "passing to said devices of said embedded signal," not the events themselves.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The phrase "recording the receipt of and passing to said devices of said embedded signals" means preserving for later reference (1) the receipt of said embedded signals and (2) the passing to said devices of said embedded signals. The "recording" step is performed in addition to any use or storage of the embedded signal itself.

3. "encrypted embedded signals"

The disputed term is found in dependent claim 15, which is reproduced below for reference, with the disputed term in boldface:

15. A method of processing signals as claimed in claim 14 including the step of decrypting **encrypted embedded signals**.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[“encrypted” same as in Harvey VI, claim 23]

Post-Hearing: Any “embedded signal” that is encrypted. This term does not refer back to the “embedded signal” recited in [Harvey III] claim 14.

DEFENDANTS' PROPOSED CONSTR.

[not addressed]

Post-Hearing: (says no construction is required). “Construction of this phrase will be resolved by construction of the terms identified in S-A’s *Markman* Exhibit 59 [which is a summary of disputed claim terms for all the patents-in-issue].

Plaintiffs’ Harvey III Chart at 20; Joint Summary at 61.

The parties urge that the construction of “encrypted” should apply to that term as it appears in claim 17.

According to the JCCS, the parties agree that the disputed term requires a device or method that uses a digital key in conjunction with an associated mathematical algorithm to encipher (render unintelligible or unusable) digital, but do not encompass the scrambling of an analog television transmission. JCCS at 3.

b) Discussion

The sole issue at this point is whether “encrypted embedded signals” in claim 15 finds antecedent basis in “embedded signals” in claim 14. Claim 14 does not mention “encrypted embedded signals,” nor does claim 15 call for “said encrypted embedded signals” or “the encrypted embedded signals.” Accordingly, “encrypted embedded signals” in claim 15 does not require antecedent basis.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

"Encrypted embedded signals" means any "embedded signals" that are encrypted.

4. "encrypted information transmission"

This term appears in dependent claim 17, which calls for:

17. A method of processing signals as claimed in claim 14 including the step of decrypting an **encrypted information transmission**. [Boldface added.]

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[“encrypted:” same as in Harvey VI, claim 23] [not addressed]

Post-Hearing: Any “information transmission” that is encrypted. This term does not refer back to the “information transmission” recited in [Harvey III] claim 14.

DEFENDANTS' PROPOSED CONSTR.

Post-Hearing: (says no construction is required). “Construction of this phrase will be resolved by construction of the terms identified in S-A's *Markman* Exhibit 59 [which is a summary of disputed claim terms for all the patents-in-issue].

Plaintiffs' Harvey III Chart at 20; Joint Summary at 62.

b) Discussion

As with the term “encrypted embedded signals,” the sole issue at this point appears to be whether “encrypted information transmission” in claim 17 finds antecedent basis in “information transmission” in claim 14. Claim 14 does not mention “encrypted information transmission.” Further, claim 17 refers to decrypting “an encrypted information transmission.” No antecedent basis is necessary.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

"Encrypted information transmission" means any "information transmission" that is encrypted.

5. "modification control signals"

The disputed term is called for in independent claims 20, 24 and 25. Claim 20 is representative, and is reproduced below for reference, with the disputed term in boldface:

20. A method of generating computer output at a multiplicity of receiver stations each of which includes a computer adapted to generate and transmit user specific signals to one or more associated output devices, with at least some of said computers being programmed to process **modification control signals** so as to modify said computers' method of processing data and generating output information content, each of said computers being programmed to accommodate a special user application, comprising the steps of: * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

DEFENDANTS' PROPOSED CONSTR.

A signal that controls the modification of the [same as in Harvey I and II] method used by the computers to process data and generate output.

Plaintiffs' Harvey III Chart at 6-7, and Defendants' Harvey III Chart at 23.

The plaintiffs urge that the construction of "modification control signals" should apply to that term as it appears in claim 24.

b) Discussion

Again, the dispute concerns whether the "modification control signals" must be transmitted from the program transmission source. The claims have no requirement that the disputed signals come from the program source, nor does the intrinsic record require the same. The special master thus adopts the reasoning with respect to "overlay modification control signals" of Harvey I, claim 1, and "modification control signals" of Harvey II, claim 1, above.

Otherwise, the plain language of the claim describes what the "modification control signals" are for, namely, "to modify said computers' method of processing data and generating output information content."

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The plain language of the claims defines the "modification control signals." The "modification control signals" are not limited to signals transmitted from the program source.

6. "instruct-to-generate signals"

The disputed term appears in independent claims 20, 24 and 25. Claim 20 is representative, and is reproduced below for reference, with the disputed term in boldface:

20. A method of generating computer output at a multiplicity of receiver stations each of which includes a computer adapted to generate and transmit user specific signals to one or more associated output devices, * * *, comprising the steps of:

transmitting an **instruct-to-generate signal** to said computers at a time when corresponding user specific output information content does not exist,

detecting the presence of **said instruct-to-generate signal** at selected receiver stations and coupling **said instruct-to-generate signal** to the computers associated with **said selected stations**, and

causing **said last named computer** to generate their user specific output information content in response to **said instruct-to-generate signal**, thereby to transmit to each of their associated output devices an output signal comprising the user specific output information content and the user specific signal of its associated computer, the output signals at a multiplicity of said output devices being different, with each output signal specific to a specific user.

a). The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

DEFENDANTS' PROPOSED CONSTR.

A signal, from a source at a location other than the receiver station, that instructs a computer to

produce user specific output information content.

Post-Hearing: (says no construction is necessary; otherwise, "a signal, from a source at a location other than the receiver station, that instructs a computer to produce user specific output information content").

computer to locally produce/create and then transmit user specific output information content and a user specific signal to its associated output device for presentation/display to a user at that subscriber receiver station only, at a time coordinated with the communication of data to all subscribers.

Post-Hearing: A control signal transmitted from the program transmission source at a time coordinated with the communication of data to all subscribers that instructs subscriber computers to simultaneously produce user specific output information content.

Plaintiffs' Harvey III Chart at 27; Defendants' Harvey III Chart at 23; Joint Summary at 13.

The parties urge that the construction of "instruct-to-generate signals" should apply to that term as it appears in claims 24 and 25.

According to the defendants, the parties dispute "whether the 'instruct-to-generate signal' (1) causes production and then transmission of user specific output information and user specific signals to a user at that subscriber station only, at a time coordinated with the transmission of data to all subscribers and (2) is transmitted from the program transmission source (rather than merely any source other than the receiver station)," both of which the defendants urge is required by the intrinsic evidence. Defendants' Opening *Markman* Brief at 35-36.

The plaintiffs do not address this term in their *Markman* briefing.

b) Discussion

The parties' dispute here is much the same as addressed in connection with the other "instruct-to" signals of Harvey I and II, and the reasoning set forth above for those constructions is adopted here. The parties do not dispute that the "instruct-to-generate signal" is just that – a signal.

As for the source of the "instruct-to-generate signal," nothing in claims 20 or 24, or the intrinsic record requires that those signals come from the program transmission source. Claim 25,

however, expressly requires that the "instruct-to-generate signal" be transmitted from a "transmission source."

25. In a method of generating computer output * * *, the steps of:

detecting at selected receiver stations the presence of an instruct-to-generate signal transmitted by a transmission source and coupling said instruct-to-generate signal to the computers associated with said selected stations, * * *

While a "transmission source" is not necessarily a "program source," the point is that unless otherwise expressly required by the plain language of the claims, the "instruct-to-generate signal" does not have to be transmitted from the program source.

The defendants propose two other limitations, namely, that the disputed signal (1) is transmitted at a time coordinated with the communication of data to all subscribers and (2) instructs subscriber computers to simultaneously produce user specific output information content. As for (1), that is not required by the language of claim 1, nor do the defendants point to anything in the intrinsic record requiring the same. The only reference to the timing of "instruct-to-generate signal" transmission is that the signal is transmitted "at a time when corresponding user specific output information content does not exist." Again, the plain language of the claim is clear.

As for (2), that is what Harvey *et al.* urged during prosecution. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 3 of 7) at PID01686 ("As explained above, in applicants' invention, each of a multiplicity of computers is controlled by instructions from one central control site and caused to generate and transmit information specific to a single user coordinated with the program material from the central site. This means that each of a multiplicity of separate jobs must be processed simultaneously and, in effect, outputted simultaneously to a multiplicity of subscribers. [Emphasis added.]"). *See, e.g., Elkay Manufacturing Co. v. Ebco Manufacturing Co.*, 192 F.3d 973, 980 (Fed. Cir. 1999), *cert. denied*, 120 S. Ct. 1672 (2000) ("When multiple patents derive from the same initial application, the prosecution history regarding a claim limitation in any patent that has issued applies with equal force to subsequently issued patents that contain the same claim limitation."); *Omega Engineering, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1333 (Fed. Cir. 2003) ("[A]n interpretation asserted in the prosecution of a parent application can also affect continuation applications, * * *, continuation-in-

part applications, * * *, and even related continuation-in-part applications arising from the same parent * * *." (citations omitted)).

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The plain language of the claims defines the "instruct-to-generate signal." In claims 20 and 24, the "instruct-to-generate signal" is not limited to a signal transmitted from the program source. In claim 25, the "instruct-to-generate signal" is transmitted from the "transmission source." In light of arguments made during prosecution, the claims require that the "instruct-to-generate signal" causes the computers simultaneously to generate their user specific output information content.

7. "user specific output information content"

This term appears in independent claims 20, 24 and 25. Claim 20 is representative, and is reproduced below for reference, with the disputed term in boldface:

20. A method of generating computer output at a multiplicity of receiver stations each of which includes a computer adapted to generate and transmit user specific signals to one or more associated output devices, with at least some of said computers being programmed to process modification control signals so as to modify said computers' method of processing data and generating output information content, each of said computers being programmed to accommodate a special user application, comprising the steps of:

transmitting an instruct-to-generate signal to said computers at a time when corresponding user specific output information content does not exist,

detecting the presence of said instruct-to-generate signal * * *, and

causing said last named computer to generate their user specific output information content in response to said instruct-to-generate signal, thereby to transmit to each of their associated output devices an output signal comprising the user specific output information content and the user specific signal of its associated computer, the output signals at a multiplicity of said output devices being different, with each output signal specific to a specific user.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

Information content output by the computers of the receiver stations that relates to a particular receiver station or to the user or users of that receiver station, but which may be, but does not necessarily have to be, unique to that particular station or users.

Post-Hearing: [no change]

Plaintiffs' Harvey III Chart at 21, 30; Defendants' Harvey III Chart at 25; Joint Summary at 13.

The defendants urge that the arguments with respect to "user specific signals" in Harvey II, claim 1 apply here. Defendants' Opening *Markman* Brief at 37.

The plaintiffs do not address this term in their briefs.

b) Discussion

Based on the proposed constructions, the dispute primarily concerns whether the disputed information may relate to a particular receiver station rather than to a "specific user." As the defendants suggest, that is discussed above in connection with construction of the term "user specific signals" in Harvey II. In short, the claim expressly calls for "user specific," not "receiver station specific," output information content, and, as discussed above *vis-à-vis* "user specific signals," the examples in the specification are consistent with that construction. For example, in the "Exotic Meals of India" television cooking show example, the cooking show host says "If you are interested in cooking what we are preparing here and want a [sic] your own printed copy of the recipe tailored to your own tastes and your own shopping list for a charge of only 10 cents, enter on your Widget Signal Generator and Local Input the information that you see on your screen." Harvey III, col. 261, lines 27-33. Shortly thereafter, according to the specification,

[S]aid program originating studio embeds in the transmission of said "Exotic Meals of India" programming and transmits a particular second SPAM message

At the station ***, said message is detected at TV signal decoder, 145, and said

DEFENDANTS' PROPOSED CONSTR.

Substantive data, specific to a particular user at the subscriber receiver station, generated locally by the receiver station computer in response to an instruct-to-generate signal.

Post-Hearing: Substantive data, specific to a particular user at the subscriber receiver station

execution segment information invokes particular controlled function instructions that cause said message to be transferred to the controller, 39, of decoder, 203. ***.

Receiving said message causes the controller, 39, of decoder, 203, to load and execute said generate-recipe-and-shopping-list instructions at microcomputer, 205, ***.

Executing said generate-recipe-and-shopping-list instructions causes microcomputer, 205, to generate information of the specific fish curry recipe and fish curry shopping list of the family of the subscriber of the station ***; to cause said recipe and shopping list to be printed at printer, 221; and to retain information of said shopping list at particular memory.

Id. at col. 262, lines 29 -67. That is, the "user specific output information content" – here, the shopping list – is specific to the subscriber (more particularly, to the subscriber' family), rather than the station. That is demonstrated by the specificity with which the computer then identifies ingredients particularly for various members of the subscriber's family:

Automatically, microcomputer, 205, accesses its A:DATA_OF.URS file, in a fashion well known in the art, and selects the aforementioned information that specifies the size of the family of the subscriber of said station together with the tastes and dietary habits of the members of said family; determines that one ingredient of the recipe of said family is "Patak's low-salt Vindaloo Curry Paste" (because said family prefers particular very hot and spicy foods and prefers to minimize salt consumption); computes that, at one-half pound of halibut fish and one teaspoonful of said Vindaloo Paste per adult, the recipe of said family (which is of four adults) calls for two pounds of halibut and four teaspoonsfuls of said Paste and that the shopping list of said family lists two pounds of halibut and one jar of "Patak's low-salt Vindaloo Curry Paste"; incorporates information of said two pounds and four teaspoonsfuls of "Patak's low-salt Vindaloo Curry Paste" into generally applicable information of the recipe of said "Exotic Meals of India" programming and information of said two pounds and one jar of "Patak's low-salt Vindaloo Curry Paste" into generally applicable information of the shopping list of said programming, thereby generating (through the processes of so determining, computing, and incorporating) output information of the specific recipe and shopping list of said family; records one instance of the output of said shopping list at particular shopping-list memory; and outputs output information of said specific recipe and list to printer, 221. [Emphasis added.]

Id. at col. 263, lines 2-31.

Otherwise, the plaintiffs are correct that the disputed information may be, but does not necessarily have to be, unique, i.e., "specific" does not mean "unique," also as discussed above *vis-à-vis* "user specific signals."

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

"Special user output information content" means output information content that is specific to a user/subscriber, i.e., output information content that relates to a particular user/subscriber.

**VII.
Harvey IV**

A. Disclosure

Harvey IV issued from an application that was filed as a continuation of the application maturing into Harvey III. Thus, Harvey III and IV share the same specification and drawings. Accordingly, the background and discussion of Harvey III is applicable to Harvey IV.

B. Summary of the Substantive Prosecution History

1. Original Application – September 25, 1990

Harvey *et al.* filed application Ser. No. 588,126 on September 25, 1990, as a continuation of the application maturing into Harvey III. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 4 of 7) at PID02161. As filed, that application contained 26 claims, all but one of which were independent.

2. Office Action – March 22, 1991

In an office action of March 22, 1991, the examiner rejected all of the pending claims "under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the prior invention as set forth in claims 1-25 of U.S. Patent No. 4,965,825 [Harvey III]. Although the

conflicting claims are not identical, they are not patentably distinct from each other because all the features of the present claims are found in the claims of the patent.” *See* Plaintiffs’ Opening *Markman* Brief, Apx. F (Vol. 4 of 7) at PID02762. The examiner further explained:

The obviousness-type double patenting rejection is a judicially established doctrine based upon public policy and is primarily intended to prevent prolongation of monopoly by prohibiting claims in a second patent not patentably distinct from claims in a first patent. *In re Vogel*, 164 USPQ 619 (CCPA 1970). A timely filed terminal disclaimer in compliance with 37 CFR 1.321(b) would overcome an actual or provisional rejection on this ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.78(d).

Id.

3. Amendment – September 12, 1991

In their amendment of September 12, 1991, Harvey *et al.* amended their claims and urged that “[c]laims 16, 17, 19, 21; 23-25 have been amended to clarify the claim language. No substantive amendment is made.” *See* Plaintiffs’ Opening *Markman* Brief, Apx. F (Vol. 4 of 7) at PID02769.

Harvey *et al.* began their remarks by observing that “the examiner stated that ‘all the features of the present claims are found in the claims of the patent.’” According to Harvey *et al.*, though, that was “simply not correct. Claims 1-26 in the present application include features not found in any of the Harvey ‘825 claims. Moreover, the invention recited in claims 1-26 is patentably distinct from the invention claimed by the Harvey ‘825 patent. *In re Longi*, 759 F.2d 887, 892, 225 U.S.P.Q. 645, 648 (Fed. Cir. 1985); *Carmen Indus., Inc. v. Wahl*, 724 F.2d 932, 220 U.S.P.Q. 481 (Fed. Cir. 1983).” *Id.* at PID02769-70.

Under the heading “The Proposed Claims Include Features Not Found In the Harvey ‘825 Claims,” Harvey *et al.* urged that “[t]he present claims included a number of features which are not recited in any of the Harvey ‘825 claims. In particular, the present claims recite ‘a switch means for receiving output from said plurality of receive/distribution means, said switch means being capable of directing a selected portion of said programming . . . to an associated output device’ (claim 1). The present claims further recite a ‘matrix switch means for receiving said programming from such a

receiver/distributor means and for directing selected portions of said received programming to one or more output devices' (claim 3). None of the claims of the Harvey '825 patent recite a switch means or a matrix switch means. The Harvey '825 claims do not claim any method of data communication using a switch means. [At this point, Harvey *et al.* added a footnote: 'Of the 26 claims included in the present application, 17 specify either a switch means or a matrix switch means, and 3 more specify a method of data communication in a system that includes a switch (see e.g., claim 19).] Nothing claimed in the Harvey '825 patent performs the function of the switch set forth in the present claims." *Id.* at PID02770. Harvey *et al.* further argued that their claims "recite 'a plurality of receiver/distribution means for receiving programming from a program source and for inputting said program to a switch means and a plurality of detector means' (claim 1). The Harvey '825 claim does not recite a plurality of receiver/distribution means as recited in the present claims. [At this point, Harvey *et al.* added another footnote: 'Harvey '825 does claim, in a signal processor system, 'carrier transmission receiving means' (claim 1). However, this element performs a very different function than the receiver/distribution means of the present claims.] Applicants submit that these and other differences render the present claims patentably distinct from the Harvey '825 claims." *Id.* at PID02770-71.

Under another heading, namely, "The Examiner Has Not Established a Prima Facie Case Sufficient to Support a Rejection for Obviousness-Type Double Patenting," Harvey *et al.* argued that "[i]n making a double patenting rejection, the examiner may properly consider and rely upon the prior art and the subject matter of issued claims of the parent application, but not the teachings of the parent's specification." [Harvey *et al.*'s emphasis.] *Id.* at PID02771. "In the present case," Harvey *et al.* urged, "clear differences exist between the proposed claims and the claims of the referenced Harvey '825 patent. * * * * The examiner has pointed to no reference disclosing those features of the pending claims not found in the issued claims of the Harvey '825 patent. Further, the examiner has cited no references or other evidence to support his conclusion that modification of the Harvey '825 claims to include the absent features would be obvious under the appropriate legal standard. Having failed to provide such evidence, the examiner has not met his burden of establishing a prima facie case of obviousness-type double patenting. Therefore, the rejection of the present claims on obviousness-type double patenting cannot stand." *Id.* at PID02271-72.

4. Notice of Allowability – September 27, 1991

Apparently persuaded, the examiner issued a Notice of Allowability on September 27, 1991, and the application issued thereafter as Harvey IV. *See Plaintiffs' Opening Markman Brief, Apx. F* (Vol. 4 of 7) at PID02775.

5. Issued Independent Claims

Harvey *et al.* issued with 26 claims, of which all but claim 20 were independent. It appears that only claims 1, 2, 7, 9 and 10 contain disputed terms; thus, only those claims are reproduced below for reference:

1. In a signal processing system,

a plurality of receiver/distribution means for receiving programming from a program source and for inputting said programming to a switch means and a plurality of detector means,

a switch means for receiving output from said plurality of receiver/distribution means, said switch means being capable of directing a selected portion of said programming received from one or more said receiver/distribution means to an associated output device,

a plurality of detector means for detecting control signals respecting said programming,

a first processor means operatively connected to said plurality of detector means for identifying each detected control signal as having been detected by a particular detector means,

a storage means for receiving and storing said detected control signals, and

a second processor means for controlling the output directing function of said switch means.

2. In a signal processing system,

a plurality of receiver/distribution means for receiving programming from a program source and for inputting said programming to a switch means and a plurality of detector means,

a switch means for receiving output from said plurality of receiver/distribution means, said switch means being capable of outputting a

selected portion of said programming received from one or more said receiver/distribution means to a device for further processing,

a plurality of detector means for detecting control signals respecting said programming,

a first processor means operatively connected to said plurality of detector means for identifying each detected control signal as having been detected by a particular detector means,

a buffer/memory storage means for receiving and storing said detected control signals, and

a second processor means for controlling the output function of said switch means.

7. In a signal processing system,

a receiver/distribution means for receiving programming from a plurality of program sources and for outputting said programming to a matrix switch means and a control signal detector means;

a matrix switch means for receiving said programming from said receiver/distributor means and for directing selected portions of said received programming to a broadcast transmission means,

a control signal detector means for detecting control signals respecting said programming and transferring said control signals to storage/transfer means, said control signal detector means being configured to detect said control signals in a predetermined frequency range or at a predetermined location within said programming,

a storage/transfer means for receiving and storing said control signals and for transferring at least a portion of said control signals for further processing, and

a processor means for controlling the directing functions of said matrix switch means and the transfer functions of said storage/transfer means.

9. In a multichannel television distribution system,

a receiver/distributor means for receiving television programming from a plurality of program sources and directing said programming to a matrix switch means and a control signal detector means, a matrix switch means for receiving said programming from said receiver/distribution means and for

directing selected portions of said received programming to a recording device operatively connected to a multichannel television distribution means,

a control signal detector means for detecting control signals respecting said programming and transferring said control signals to a storage/transfer means, said control signal detector means being configured to detect said control signals in a predetermined frequency range or at predetermined locations within said programming,

a storage/transfer means for receiving and storing said control signals and for transferring at least a portion of said control signals for further processing, and

a processor means for controlling the directing functions of said matrix switch means and the transfer functions of said storage/transfer means in response to said control signals or on local command.

10. In a multichannel television distribution system,

a receiver/distributor means for receiving television programming from a plurality of program sources and outputting said programming to a matrix switch means and a control signal detector means,

a matrix switch means for receiving said programming from said receiver/distribution means and for directing selected portions of said received programming to a multichannel television distribution means,

a control signal detector means for detecting control signals respecting said programming and transferring said control signals to a storage/transfer means, said control signal detector means being configured to detect said control signals in a predetermined frequency range or at predetermined locations within said programming,

a storage/transfer means for receiving and storing said control signals and for transferring at least a portion of said control signals for further processing, and

a processor means for controlling the directing functions of said matrix switch means and the transfer functions of said storage/transfer means in response to said control signals or on local command.

C. Agreed Terms

The parties agree that the following terms require no construction: (1) "control signal," *see Joint Summary at 62*, (2) "device for further processing," *see id.* at 63, and (3) "recording device." *See id.*

The parties also agree that the term "programming" means "everything that is transmitted electronically to entertain, instruct or inform, including television, radio, broadcast print, and computer programming as well as combined medium programming." *See Joint Summary at 14.*

D. Disputed Terms

1. "program source"

The disputed term appears in asserted claims 1, 2, 7, 9 and 10. Claim 1 is selected as representative, and is reproduced below, with the disputed term in boldface:

1. In a signal processing system,

a plurality of receiver/distribution means for receiving programming from a **program source** and for inputting said programming to a switch means and a plurality of detector means,

a switch means * * *,

a plurality of detector means * * *,

a first processor means * * *,

a storage means * * *, and

a second processor means * * *.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

A supplier of programming, which can be a remote supplier (such as a satellite transmitter, a microwavé transmitter, an over-the-air terrestrial transmitter, or other transmission means) or a local supplier (such as an on-site video tape re-

DEFENDANTS' PROPOSED CONSTR.

A point of origin for a programming transmission.

Post-Hearing: [no change]

corder, video cassette recorder, digital memory, or other local storage device)."

Post-Hearing: [no change]

Plaintiffs' Harvey IV Chart at 2; Defendants' Harvey IV Chart at 2; Joint Summary at 14-15.

The parties urge that the construction of "program source" should apply to that term as it appears in claims 2, 7, 9 and 10.

According to the defendants, the parties dispute which of the words "origin" or "supplier" is appropriate. The defendants contend that the word "origin" appears in the dictionary definitions cited by both the defendants and the plaintiffs, and is used in the specification as being synonymous with "source." According to the defendants, the plaintiffs' concept of a local supplier creates inconsistencies with its construction of the terms "receiver/distributor means" and "switch means," and the plaintiffs' constructions of those two terms actually preclude it treating the video recorder 76 (of the intermediate transmission station) as a "local supplier." Defendants' Opening *Markman* Brief at 39.

The plaintiffs do not address this term in their *Markman* briefs.

b) Discussion

At the outset, as noted above, the parties have agreed that the term "programming" means "everything that is transmitted electronically to entertain, instruct or inform, including television, radio, broadcast print, and computer programming as well as combined medium programming." That appears to be, in fact, a definition provided by Harvey *et al.* in their specification. See Harvey IV, col. 8, lines 10-14 ("The term 'programming' refers to everything that is transmitted electronically to entertain, instruct or inform, including television, radio, broadcast print, and computer programming as well as combined medium programming.").

Claims 1 and 2 call for "receiving programming from a program source," claim 7 calls for "receiving programming from a plurality of program sources," and claims 9 and 10 call for "receiving television programming from a plurality of program sources." Thus, the "program source" must, at the very least, be capable of providing "programming," i.e., everything that is transmitted

electronically to entertain, instruct or inform, including television, radio, broadcast print, and computer programming as well as combined medium programming. In its broadest sense, then, a "program source" is simply a source of "programming."

The dispute apparently concerns the plaintiffs' inclusion of local "sources" as program sources. See *Markman* Tr. at 461:22 to 462:9 (MR. ALTHERR: "Our proposed definition of program source is a point of origin for a programming transmission, and I should add to this, we would like a negative exclusion that it does not include a local recorder. That's one of the things that PMC has in their definition, they say it could be a supplier, including a local recorder. *** We think that a program source as set forth on our slide 6 should be common to the system and is not a local recorder."). The defendants' basis for that limitation is WEBSTER'S NINTH NEW COLLEGIATE DICTIONARY's definition for "source," namely, "a point of origin." See *id.* at 1127 (1984). The defendants then turn to the specification at column 29, lines 10-11, in which Harvey *et al.* describe "origins of transmissions," for example, "network source stations, broadcast stations, [and] cable head end stations," in urging that local "sources" should be excluded.

The plaintiffs, on the other hand, rely on that same dictionary, albeit the tenth edition, which, according to the plaintiffs, defines "source" as "(1) a point of origin or procurement; (2) one that initiates; or (3) *one that supplies information.*" [Plaintiffs' emphasis.] The plaintiffs then rely on parts of the specification such as "[p]rogramming can also be manually delivered to said station on prerecorded videotapes and videodiscs. When played on video recorders *** or other similar equipment well known in the art, such prerecorded programming can be transmitted via switch to a field distribution system." Harvey IV, col. 182, lines 30-36.

WEBSTER'S THIRD NEW INT'L DICTIONARY (1981), at 2177, generally defines "source" in the same way as the parties' Collegiate dictionaries, and additionally defines "source" as "a point of emanation." All told, the customary meaning of "source" appears to quite broadly connote a point of origin, supply or emanation.

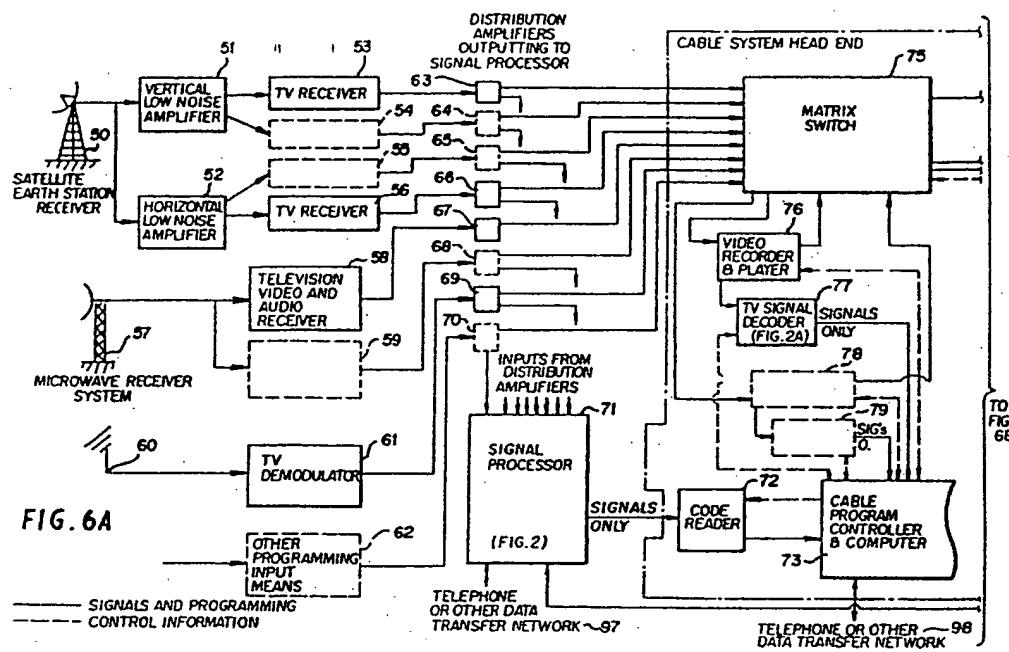
Turning to the specification, it seems that the plaintiffs are correct that a "program source" *per se* may be a remote or local source of programming. For example, in the "Summary Of The Intervention," Harvey *et al.* explained that, in general, their system "includes capacity for automatically

organizing multi-channel communications. Like television, radio, broadcast print, and other electronic media, the present invention has capacity for transmitting to standardized programming that is very simple for subscribers to play and understand. Like computer systems, the present invention has capacity for transmitting data and control instructions in the same information stream to many different apparatus at a given subscriber station, for causing computers to generate and transmit programming, and for causing receiver apparatus to operate on the basis of programming and information received at widely separated times." Harvey IV, col. 8, lines 14-27. Harvey *et al.* also disclosed other "remote" programming sources, namely, the "origins of transmission" urged by the defendants.

* * *

Harvey *et al.* also disclosed "intermediate" transmission stations that "receive and retransmit programming," *id.* at lines 62-64, that also serve as "local" program sources. In a section entitled "Automating Intermediate Transmission Stations," Harvey *et al.* explained,

FIG. 6 [which is divided into Fig. 6A and 6B] illustrates Signal Processing Apparatus and Methods at an intermediate transmission station that is a cable television system "head end" and that cablecasts several channels of television programming. *** The station receives programming from many sources. [Fig. 6A reproduced below for reference:]



Transmissions are received from a satellite by satellite antenna, 50 ***. Micro-wave transmissions are received by microwave antenna, 57 ** *. Conventional TV broadcast transmissions are received by antenna, 60 ***. Other electronic programming transmissions are received by other programming input means, 62. Each receiver/modulator/input apparatus, 53 through 62, transfers its received transmissions into the station by hard-wire to a conventional matrix switch, 75, well known in the art, that outputs to one or more recorder/players, 76 and 78; and/or to apparatus that outputs said transmissions over various channels to the cable system's field distribution system, 93, which apparatus includes cable channel modulators, 83, 87, and 91, and channel combining and multiplexing system, 92. Programming can also be manually delivered to said station on prerecorded videotapes and videodiscs. When played on video recorders, 76 and 78, or other

similar equipment well known in the art, such prerecorded programming can be transmitted via switch 75 to field distribution system, 93. [Emphasis added.]

Id. at col. 182, lines 7-36. Thus, contrary to the defendants' contention, the specification discloses video recorder 76 as a "program source." As for the "manually delivered" programming, Harvey *et al.* provided a little more detail in connection with Fig. 5:²⁷

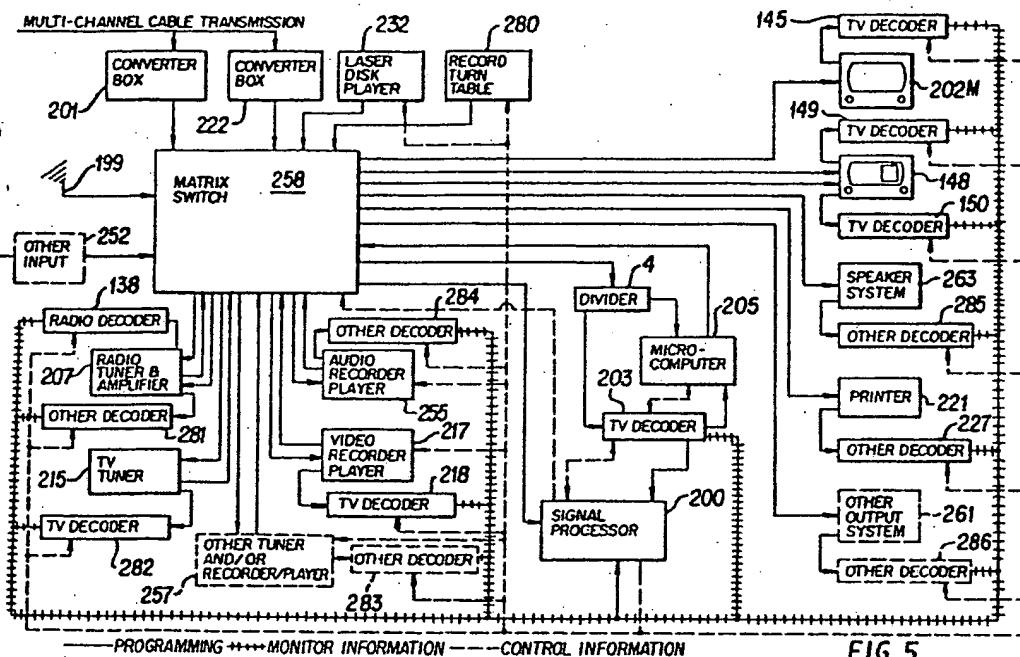


FIG. 5

Prerecorded, commercially distributed video and audio tapes, videodiscs, so-called 'compact discs' of audio, and so-called 'CD ROM' discs of data can also contain unique codes, embedded in the prerecorded programming, that identify

²⁷ Fig. 5, Harvey *et al.* explain, generally "illustrates means and methods for monitoring receiver station reception and use of programming and modes of receiver station operation and exemplifies one embodiment of a subscriber station that is preconfigured and preprogrammed to collect monitor information. The means and methods facilitate the collection of statistics that identify not only what programming is received and displayed at given subscriber stations but also, for example, which local apparatus receives programming and which displays programming, how received programming is processed, what local apparatus is controlled in the course of processing and how, what locally preprogrammed data is processed by or with the received programming, which local apparatus is caused to transmit programming, etc. Efficient collection of such statistics enables suppliers of programming and of subscriber station apparatus to identify which programming subscribers demand and how subscribers use their programming and apparatus. Fig. 5 shows a variety of input apparatus with capacity for inputting programming (including SPAM information) selectively, via matrix switch, 258, to apparatus of the subscriber station of Fig. 5, intermediate apparatus with capacity for processing and/or recording inputted programming selectively, and output apparatus for displaying or otherwise outputting programming selectively to human senses." *Id.* at col. 175, line 46 to col. 176, line 4.

the use and usage of said programming when said tapes or discs are played. For example, laser disc player, 232, can be a compact disc player upon which is loaded a compact disc. [Emphasis added.]

Id. at col. 180, lines 10-17. The “prerecorded programming” is nevertheless “programming,” even if “prerecorded.” Indeed, Harvey *et al.* apparently considered such “prerecorded programming” sources to be a transmission origin, as well. *See id.* at 178, lines 39-48 (“FIG. 5 shows that, via said bus communications means, signal processor, 200, has capacity for communicating control information (from onboard controller, 14A) to subscriber station player apparatus that has capacity for playing prerecorded programming (and in so doing, originating transmission at said station of said programming). Said player apparatus includes laser disc player, 232, record turn table, 280, audio recorder/player, 255, video recorder/player, 217, and other recorder/player, 257.”). In all, it appears that the term “program source” should be given its broad connotation. *See Texas Digital*, 308 F.3d at 1203 (Fed. Cir. 2002) (“If more than one dictionary definition is consistent with the use of the words in the intrinsic record, the claim terms may be construed to encompass all such consistent meanings.”). The specification simply does not support the remote/local distinction that the defendants urge.

The defendants also urge, though, that failure to exclude “local” program sources would create inconsistencies with the plaintiffs’ proposed construction of the terms “receiver/distributor means” and “switch means.” Not so. It may be that other claim language effectively excludes a “local” “program source,” but that does not create an inconsistency such that the term “program source” should not be given its broad connotation. For example, claim 1 calls for “receiving programming from a program source,” not all program sources. If the plain language of the claims effectively precludes certain “program sources,” then that is a different matter than the present issue of construing the term “program source” *per se*. There is nothing in the claims or intrinsic record that would limit that term to, or exclude, certain types of sources.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

"Program source" means a point of supply, origin or emanation of programming.

2. "receiver/distribution means"

Each of the asserted claims 1, 2, 7, 9 and 10 call for a "receiver/distribution means," albeit with slightly different stated functions. Those claims are reproduced below in pertinent part, with the disputed term in boldface:

1. In a signal processing system,

a plurality of **receiver/distribution means** for receiving programming from a program source and for inputting said programming to a switch means and a plurality of detector means,

a switch means * * *

2. In a signal processing system,

a plurality of **receiver/distribution means** for receiving programming from a program source and for inputting said programming to a switch means and a plurality of detector means,

a switch means * * *

7. In a signal processing system,

a **receiver/distribution means** for receiving programming from a plurality of program sources and for outputting said programming to a matrix switch means and a control signal detector means,

a matrix switch means * * *

9. In a multichannel television distribution system,

a **receiver/distributor means** for receiving television programming from a plurality of program sources and directing said programming to a matrix

switch means and a control signal detector means, a matrix switch means
* * *

10. In a multichannel television distribution system,

a receiver/distributor means for receiving television programming from a plurality of program sources and outputting said programming to a matrix switch means and a control signal detector means,

a matrix switch means * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Receiver/Distribution Means" should be construed under § 112, ¶ 6. The recited functions are "receiving programming from a program source" and "inputting said programming to a switch means and a plurality of detector means." The corresponding structures disclosed in the specification are "the various receiver types 53-62 shown in FIG 6A of [Harvey IV], which may include associated antenna and conductors, and equivalents that were known at the time the patent issued." Such programming includes analog and digital programming transmissions, consistent with the definition of "Television Program Transmission" set forth in [Harvey VI], Claim 6.

Post-Hearing: The term "receiver/distribution means" should be construed under § 112(6). The functional recitation is "for receiving programming from a program source and for inputting said programming to a switch means and a plurality of detector means." The corresponding structures include "the various receiver types 53-62 shown in Fig. 6A of [Harvey IV], which may include associated antenna and conductors, as well as equivalents that were known at the time the patent issued."

DEFENDANTS' PROPOSED CONSTR.

35 U.S.C. § 112, ¶ 6 applies to this term, and that the functional recitation is "for receiving programming from a program source and for inputting said programming to a switch means and a plurality of detector means." "Receiver/distribution means" means a television or radio programming receiving structure that receives programming from a programming source, the receiving structure being any of (1) satellite antenna 50, one of the low noise amplifiers 51-52, and one of the TV receivers 53-56, (2) microwave antenna 57, and one of television video and audio receivers 58-59, or conventional TV antenna 60 and TV demodulator 61 or other input means 62; a distribution amplifier 63-69 electrically connected to the output of the programming receiving structure; and electrical conductors that connect the output of the distribution amplifier 63-69 to a 'switch means' and a 'plurality of detector means;' and equivalents.

Post-Hearing: Pursuant to 35 U.S.C. § 112(6), "receiver/distribution means" means "a television or radio programming receiving structure that receives programming from a programming source, and inputs the programming to a switch means and a plurality of detector means. The corresponding structure is any of (1) satellite antenna 50, one of the low noise amplifiers 51-52, and one of the TV receivers 53-56, (2) microwave antenna 57, and one of television video

and audio receivers 58-59, or conventional TV antenna 60 and TV demodulator 61 or other input means 62; a distribution amplifier 63-70 electrically connected to the output of the programming receiving structure; and electrical conductors that connect the output of the distribution amplifier 63-70 to a 'switch means' and a 'plurality of detector means,' and equivalents."

Plaintiffs' Harvey IV Chart at 1-2; Defendants' Harvey IV Chart at 2-3; Joint Summary at 15-16.

The parties urge that the construction of "receiver/distribution means" should apply to that term as it appears in claims 2, 7, 9 and 10.

According to the JCCS, the parties agree that § 112(6) applies to that term, and that the recited function is "for receiving programming from a program source and for inputting said programming to a switch means and a plurality of detector means." JCCS at 4.

The defendants urge that the parties agree that elements 53-62, as shown in Fig. 6A, are part of the corresponding structure for the disputed term, but that the plaintiffs fail to identify any structure for performing the "input" function. According to the defendants, elements 63-70 perform that "inputting" part of the recited function. Defendants' Opening *Markman* Brief at 40.

b) Discussion

The parties agree that this limitation should be construed under § 112(6). Section 112(6) provides:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Section 112(6) thus allows "an applicant [to] describe an element of his invention by the result accomplished or the function served, rather than describing the item or element to be used ***." *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 27 (1997).

The general hallmarks of a means-plus-function element are: (1) the element is expressed in terms using “means” or “step” which raises a presumption that there was an intent to invoke § 112(6), *Al-Site Corp. v. VSL Int'l, Inc.*, 174 F.3d 1308, 1318 (Fed. Cir. 1999)(“If the word ‘means’ appears in a claim element in combination with a function, it is presumed to be a means-plus-function element”), *see also Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1584 (Fed. Cir. 1996); (2) a specified function follows the “means” or “step” and is linked to the “means” or “step,” *York Products, Inc. v. Central Tractor Farm & Family Ctr.*, 99 F.3d 1568, 1574 (Fed. Cir. 1996); and (3) there is insufficient structure, material or acts set out in the claim for achieving the specified function. *See Apex v. Raritan*, 325 F.3d 1364, 1372 (Fed. Cir. 2003); *Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 530-31 (Fed. Cir. 1996), *cert. denied*, 522 U.S. 812 (1997). “Means-plus-function” limitations are construed, as required by § 112(6), to cover the corresponding structure, material or acts described in the specification and equivalents thereof. *In re Donaldson*, 16 F.3d 1189 (Fed. Cir. 1994)(*en banc*).

The Court must decide as a matter of law whether a particular term or phrase is governed by § 112(6). *See Personalized Media Communications LLC v. Int'l Trade Commission*, 161 F.3d 696, 702 (Fed. Cir. 1998); *Rodime PLC v. Seagate Technology, Inc.*, 174 F.3d 1294 (Fed. Cir. 1999), *cert. denied*, 528 U.S. 1115 (2000). *Markman*-type claim construction of a means-plus-function limitation requires that the Court first identify the stated function and secondly identify the corresponding structure, material, or acts described in the specification that is clearly linked to or associated with that function. *See Altiris*, 318 F.3d at 1375; *Chiuminatta Concrete Concepts, Inc. v. Cardinal Industries, Inc.*, 145 F.3d 1303, 1306 (Fed. Cir. 1998). The foregoing applies to all “means” limitations construed herein.

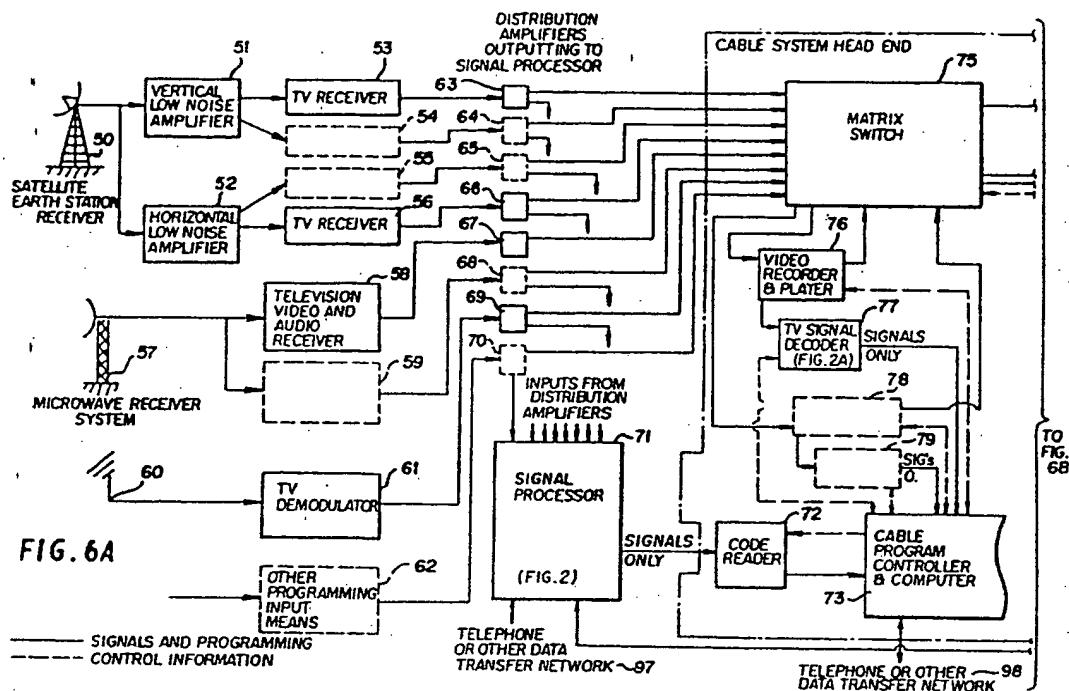
The disputed limitation uses the word “means” followed by a recitation of function, and presumptively should therefore be construed under § 112(6). There does not appear to be sufficient structure recited in the claim for performing the function, nor do the words “receiver/distribution” appear to connote sufficient structure, and thus the limitation should be construed as a means-plus-function limitation under § 112(6). That is, while the word “receiver” may, according to commonly available dictionaries such as the MODERN DICTIONARY OF ELECTRONICS 628 (7th ed. 1999)(defining “receiver” as, *inter alia*, “a device for the reception and, if necessary, demodulation of electrical signals”), connote structure, the words “receiver/distribution,” taken together, do not appear to connote structure. In particular, the term “distribution” does not connote structure, *see id.* at

211 (defining "distribution" as "[t]he number of occurrences of the particular values of a variable as a function of those values"); McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS 631 (6th ed. 2003)(defining "distribution," for example, in the industrial engineering context as "[a]ll activities that involve efficient movement of finished products from the end of the production line to the consumer"), nor does it appear to connote any structure when used in conjunction with "receiver." The word "distribution" is not used as an adjective for receiver, nor does the word "receiver" appear to take on a different structural connotation when used in conjunction with the word "distribution." Thus, the special master agrees with the parties that this limitation should be construed under § 112(6).

The next task is to identify the recited function. In claim 1, the recited functions are "receiving programming from a program source" and "inputting said programming to a switch means and a plurality of detector means." In claim 2, the recited functions are "receiving programming from a program source" and "inputting said programming to a switch means and a plurality of detector means." In claim 7, the recited functions are "receiving programming from a plurality of program sources" and "outputting said programming to a matrix switch means and a control signal detector means." In claim 9, the recited functions are "receiving television programming from a plurality of program sources" and "directing said programming to a matrix switch means and a control signal detector means." In claim 10, the recited functions are "receiving television programming from a plurality of program sources" and "outputting said programming to a matrix switch means and a control signal detector means."

Finally, the focus turns to identifying the structure "corresponding" to the recited functions. According to the defendants, the parties agree that elements 53-62 of Fig. 6A "correspond" to the recited function, but that the plaintiffs fail to include elements 50-52 and 63-70. Defendants' Opening *Markman* Brief at 40 and n.22. The recited functions are all sufficiently similar to take the recited functions of claim 1 as representative in identifying the "corresponding structure:" (1) "receiving programming from a program source" and (2) "inputting said programming to a switch means and a plurality of detector means."

The parties have focused particularly on Fig. 6A as depicting the "corresponding structure."



With respect to the representative first function, namely, "receiving programming from a program source," Harvey *et al.* explain that "[t]he station receives programming from many sources."

Transmissions are received from a satellite by satellite antenna, 50, low noise amplifiers, 51 and 52, and TV receivers, 53, 54, 55, and 56. Microwave transmissions are received by microwave antenna, 57, and television video and audio receivers, 58 and 59. Conventional TV broadcast transmissions are received by antenna, 60, and TV demodulator, 61. Other electronic programming transmissions are received by other programming input means, 62.

Harvey IV, col. 182, lines 12-21. Thus, the specification discloses that at least elements 50-62, are "clearly linked" to, and therefore constitute "corresponding structure" for, the first recited function.

With regard to the representative second function, namely, "inputting said programming to a switch means and a plurality of detector means" the specification further discloses that "[e]ach receiver/modulator/input apparatus, 53 through 62, transfers its received transmissions into the station by hard-wire to a conventional matrix switch, 75, well known in the art, that outputs to one or

more recorder/players, 76 and 78, and/or to apparatus that outputs said transmissions over various channels to the cable system's field distribution system, 93 ***." *Id.* at lines 22-28 (emphasis added). Thus, the specification "clearly links" elements 53-62 to the second function of "inputting said programming to a switch means."

However, the recited function also calls for "inputting said programming to *** a plurality of detector means." Fig. 6A does not show detectors.²⁸ The specification further explains, though, that the signals from elements 53-62 are passed to the dedicated distribution amplifiers 63-70, which split the incoming programming into two paths – one to the matrix switch and the other to the signal processor 71:

In line between each of the aforementioned receiver/demodulator/input apparatus, 53, 54, 55, 56, 57, 58, 59, 60, 61, or 62, and matrix switch, 75, is a dedicated distribution amplifier, 63, 64, 65, 66, 67, 68, 69, or 70, that splits each incoming feed into two paths. One path is the conventional path whereby programming flows from each given receiver/demodulator/input apparatus, 53, 54, 55, 56, 57, 58, 59, 60, 61, or 62, to matrix switch, 75. The other path inputs the transmission of said given receiver/demodulator/input apparatus, 53, 54, 55, 56, 57, 58, 59, 60, 61, or 62, individually to signal processor system, 71. [Emphasis added.]

²⁸ The parties also dispute the term "detector means." That term is construed separately below as a non-§ 112(6) limitation to simply mean a "detector."

Id. at lines 45-62. In Fig. 6A, the signal processor contains a reference to Fig. 2, reproduced below:

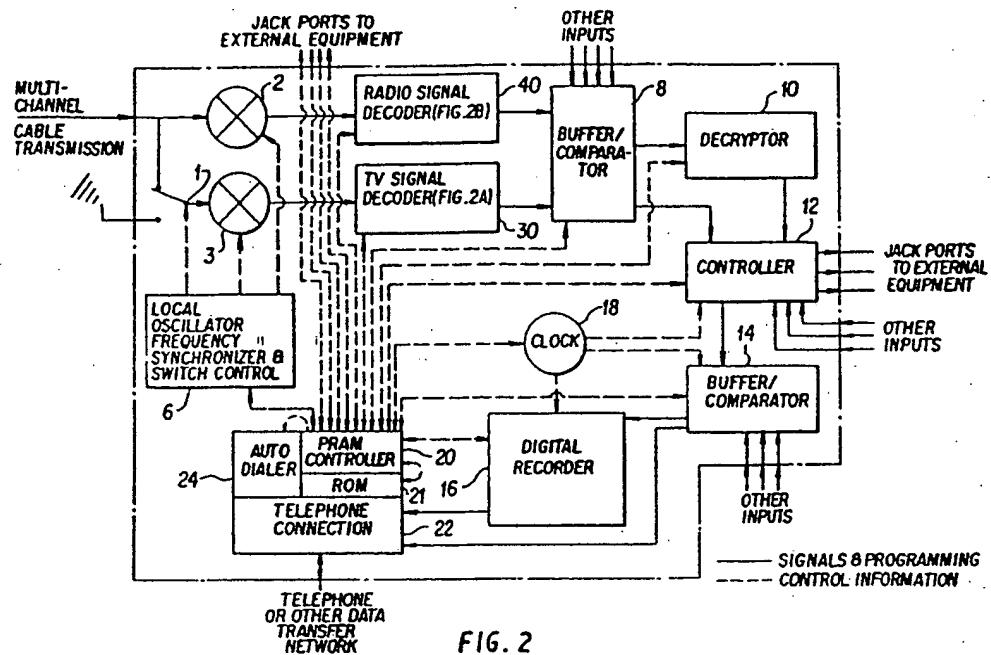


FIG. 2

which depicts a radio signal decoder 40 and a TV signal decoder 30. Those decoders contain references to Figs. 2B and 2A, respectively. Figs 2A depicts digital detectors 34, 37 and 38:

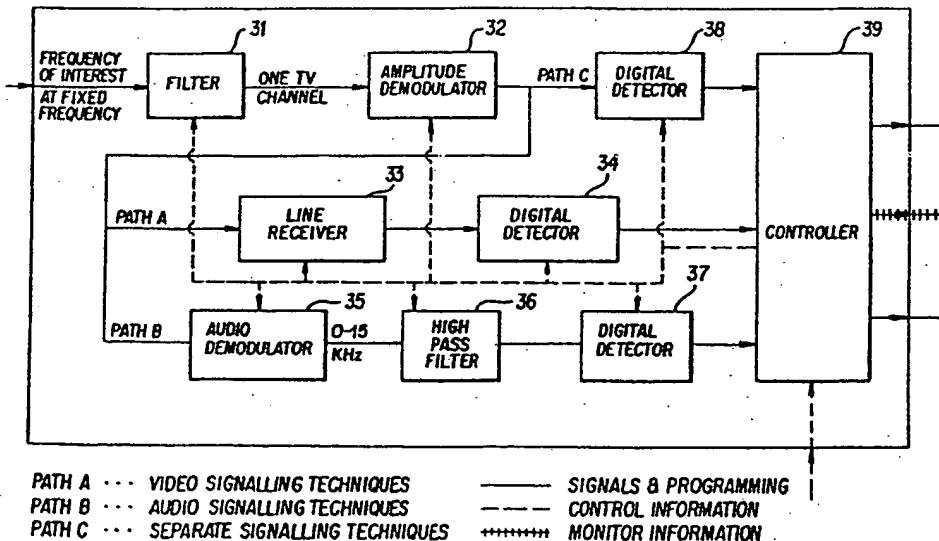


FIG. 2A

and Fig 2B depicts digital detector 43.

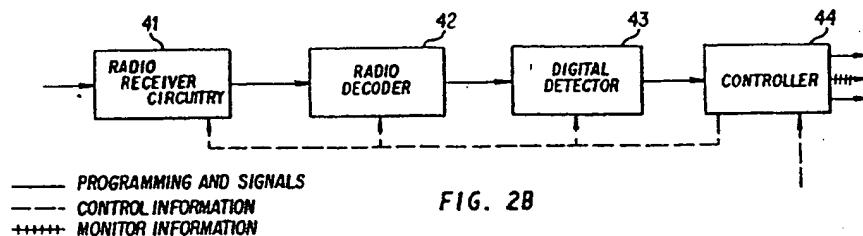


FIG. 2B

Thus, when the disclosed elements are so reviewed, it is clear that elements 53-62 ultimately "input[] said programming to * * * a plurality of detector means" located in the signal processor of Fig. 6A.

However, the defendants also urge that the distribution amplifiers 63-70 between the receivers and the matrix switch are also "corresponding structure." As noted above, the specification explains that those amplifiers are "dedicated" and serve to "split[] each incoming feed into two paths," namely, one path to the matrix switch, and the other to the signal processor. In the specification, though, those elements do not appear to be "clearly linked" to the recited functions. While the specification explains that elements 53-62 "transfer [their] received transmissions * * *, i.e., those elements are "clearly linked" to the recited function, amplifiers 63-70 serve to split those transmissions into two paths. Thus, while those amplifiers 63-70 enable the elements 53-62 to perform the recited function, they are not "clearly linked" to the recited functions *per se*. Structure that merely enables other structure to perform its function is not necessarily "corresponding structure." See *Med. Instrumentation & Diagnostic Corp. v. Elekta, AB*, 344 F.3d 1200, 1211-12 (Fed. Cir. 2003).

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The "receiver/distribution means" called for in claims 1, 2, 7, 9 and 10 should be construed as a means-plus-function limitation under § 112(6). In claim 1, the recited functions are "receiving programming from a program source" and "inputting said programming to a switch means and a plurality of detector means." In claim 2, the recited functions are "receiving programming from a program source" and "inputting said programming to a switch means and a plurality of detector means." In claim 7, the recited functions are "receiving programming

from a plurality of program sources" and "outputting said programming to a matrix switch means and a control signal detector means." In claim 9, the recited functions are "receiving television programming from a plurality of program sources" and "directing said programming to a matrix switch means and a control signal detector means." In claim 10, the recited functions are "receiving television programming from a plurality of program sources" and "outputting said programming to a matrix switch means and a control signal detector means." The structures "corresponding" to those functions are elements 50-62, as depicted in Fig. 6A.

Under the terms of § 112(6), those limitations should therefore be construed to cover that corresponding structure and equivalents thereof.

3. "switch means"

This term appears in claims 1 and 2:

1. In a signal processing system,

a plurality of receiver/distribution means * * *,

a switch means for receiving output from said plurality of receiver/distribution means, said switch means being capable of directing a selected portion of said programming received from one or more said receiver/distribution means to an associated output device,

a plurality of detector means * * *

2. In a signal processing system,

a plurality of receiver/distribution means for * * *,

a switch means for receiving output from said plurality of receiver/distribution means, said switch means being capable of outputting a selected portion of said programming received from one or more said receiver/distribution means to a device for further processing,

a plurality of detector means * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

DEFENDANTS' PROPOSED CONSTR.

"Switch Means" should be interpreted under 35 U.S.C. § 112, ¶ 6 applies to this term, and [] § 112, ¶ 6. The recited functions are "receiving" the functional recitation is "for receiving output

output from said plurality of receiver/distribution means" and "being capable of directing a selected portion of said programming received from one or more said receiver/distribution means to an associated output device." The corresponding structure disclosed in the specification is "the matrix switch 75 disclosed in the specification and equivalents known at the time the patent issued." The term "Matrix Switch" means "an electronically controllable device having multiple inputs and multiple outputs, capable of interconnecting any given input with any given output."

Post-Hearing: The term "switch means" should be construed under § 112(6). The functional recitation is "for receiving output from said plurality of receiver/distribution means." The corresponding structure include "matrix switch 75, as well as equivalents known at the time the patent issued.

The term "matrix switch" should be construed to mean "an electronically controllable device having multiple inputs and multiple outputs, capable of interconnecting any given input with any given output."

from said plurality of receiver/distributor means," and for "directing a selected portion of said programming received from one or more said receiver/distribution means to an associated output device." "Switch means" means "a matrix switch 75, having a plurality of vertical paths, a plurality of horizontal paths, and electromagnetically-operated mechanical means for interconnecting any one of the vertical paths with any one of the horizontal paths, the inputs of which are connected to the outputs of the 'receiver/distribution means,' and the outputs which are connected to an associated output device and equivalents thereof, and not including a multiplexer, which has two or more inputs and a single output."

Post-Hearing: Pursuant to 35 U.S.C. § 112(6), "switch means" means "a matrix switch 75, having a plurality of vertical paths and a plurality of horizontal paths for interconnecting any one of the vertical paths with any one of the horizontal paths, the inputs of which are connected to the outputs of the 'receiver/distribution means,' and the outputs which are connected to an associated output device and equivalents thereof, and not including a multiplexer, which has two or more inputs and a single output.

Plaintiffs' Harvey IV Chart at 6-7; Defendants' Harvey IV Chart at 4-5; Joint Summary at 17-18.

According to the JCCS, the parties agree that § 112(6) applies, but dispute the function and corresponding structure. JCCS at 4.

According to the plaintiffs, the "corresponding" structure includes "matrix switch 75," but disagree with the defendants on whether additional structures should be included along with that matrix switch. The plaintiffs urge that the matrix switch alone is a corresponding structure, and contend that the defendants include superfluous structure and limit the matrix switch to a specialized mechanical hardware "cross-bar" switch. Plaintiffs' Opening *Markman* Brief at 17-18.

According to the defendants, on the other hand, the parties dispute (1) whether the recited function includes the step of "directing," and (2) the corresponding structure. As for the corre-

sponding structure, the defendants say that the specification discloses the matrix switch 75 as "of the type well known in the art," which, at the time of the invention, was a "cross bar switch." The defendants also contend that the matrix switch does not include the system's multiplexer or any other multiplexer because (1) the patentee distinguished between "matrix switch 75" and "multiplexer 92" and (2) a matrix switch is different from a multiplexer, *i.e.*, "a matrix switch allows any one of a plurality of inputs to be connected to any one of a plurality of outputs" but a multiplexer "has only one output, and interleaves a plurality of input signals onto that one output." Defendants' Opening *Markman* Brief at 41-43.

b) Discussion

The disputed term uses the word "means" followed by a recitation of function, and is thus presumptively to be construed under § 112(6). However, the special master disagrees with the parties that the term should be so construed. A court "has an independent obligation to determine the meaning of the claims," *see Exxon Chemical Patents*, 64 F.3d at 1555, and thus must address issues of claim construction without deference to the parties' positions. *See also Rodime PLC*, 174 F.3d at 1302; *Smiths Indus. Med. Sys., Inc. v. Vital Signs, Inc.*, 183 F.3d 1347, 1357 (Fed. Cir. 1999). The claims recite the word "switch," which clearly connotes sufficient structure for performing the recited function to rebut the presumption and remove the term from the ambit of § 112(6).

For example, WEBSTER'S THIRD NEW INT'L DICTIONARY 2313 (1981) defines "switch" as "a device for making, breaking, or changing the connections in an electrical circuit." That basic understanding of what a switch does has generally not changed over the years, except that "switches" more recently have been implemented in software, as well. The IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONIC TERMS 271-272 (6th ed. 1996), for example, variously defines "switch" as:

(3) (computers) A device or programming technique for making a selection, for example, a toggle, a conditional jump. (C) [20], [85]

(4) (electric and electronics parts and equipment) A device for making, breaking, or changing the connections in an electric circuit. *Note:* a switch may be operated by manual, mechanical, hydraulic, thermal, barometric, or gravitational means, or by electromechanical means not falling within the definition of "relay." (GSD)
200-1975r

* * * *

(7) (A) An electrical or mechanical device used for opening, closing, or changing the connection of a circuit. *Synonym:* switchpoint. *See also:* DIP switch; display switch; function switch; relay; sense switch. (B) To open, close, or change the connection of a circuit as in (A). (C) A device used for making a selection, as in a toggle. (C) 610.10-1994

Accord AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS 1133-1134 (7th ed. 2000)(also defining "switch" as "(5) the process of using a switch. (C) 610.10-1994w."). Another source, the MODERN DICTIONARY OF ELECTRONICS (7th ed. 1999), defines "switch" as:

1. A mechanical or electrical device that completes or breaks the path of the current or sends it over a different path.
2. In a computer, a device or programming technique by means of which selections are made.
3. A device that connects, disconnects, or transfers one or more circuits and is not designated as a controller, relay, or control valve. The term is also applied to the functions performed by switches.
4. A mechanical component for opening or closing (interrupting or completing) one or more electrical circuits. In electronics, as opposed to the electrical industry, switches tend to be low-voltage, low current units scaled to the size of the equipment in which they function. * * * *
5. A mechanical or electronic device designed for conveniently interrupting, completing, or changing connections in electrical circuits whenever desired or necessary. * * * *

Id. at 751. Finally, the McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS (6th ed. 2003) provides, at 2083, that a "switch" is:

[COMPUT SCI] 1. A hardware or programmed device for indicating that one of several alternative states or conditions have been chosen, or to interchange or exchange two data items.

* * * *

[ELEC] A manual or mechanically actuated device for making, breaking, or changing the connections in an electric switch. Also known as electric switch.

Clearly, the term "switch" connotes sufficient structure to one of ordinary skill in the art to rebut the presumption arising from the word "means." By way of example, removing the word "means" from the phrase, *i.e.*, "a switch means for receiving output from said plurality of receiver/distribution means, said switch means being capable of directing a selected portion of said programming received from one or more said receiver/distribution means to an associated output device," leaves the claim perfectly clear.

The specification discloses a number of different switches, but all are consistent with those descriptions. For example, Fig. 2 depicts "switch 1," which "acts to select the broadcast input or the cablecast input and passes transmissions to mixer, 3, which, with the controlled oscillator, 6, acts to select a television frequency of interest that is passed at a fixed frequency to a TV signal decoder, 30." Harvey IV, col. 18, lines 25-29. *See also id.* at col. 139, line 65.

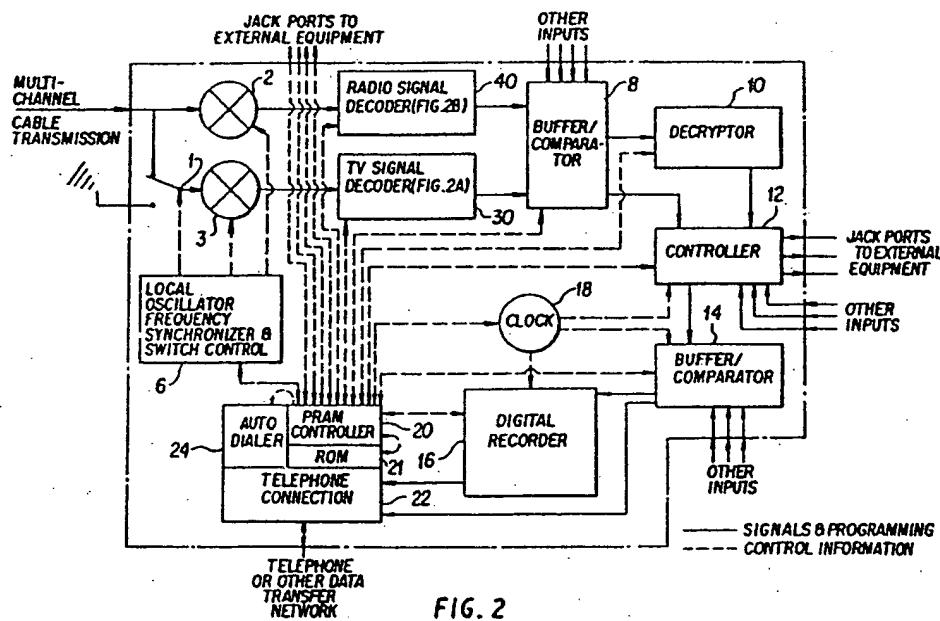


FIG. 2

Harvey *et al.* also discuss a so-called "soft switch," *see id.* at col. 87, lines 29-39 ("Placing particular so-called 'soft switches,' one of which exists at each subscriber station, all into one given original position, 'off' or 'on', then transmitting a command that is processed selectively at selected stations and places said switches at said stations into the opposite position, 'on' or 'off', makes it possible to transmit a subsequent command that returns said switches at said selected stations (and only said

switches) to said original position without any additional selective processing."); col. 139, lines 8-17, as well as matrix switches. *See, e.g., id.* at col. 88, lines 60-64 ("A second aspect of the preferred embodiment of controller, 39, is a matrix switch, 39I, that operates under control of control processor, 39J, and can transfer information of received SPAM signals from buffer, 39E, directly to addressed apparatus."); and col. 89, lines 37-40 ("Matrix switch, 39I, is a conventional digital matrix switch, well known in the art of telephone communication switching; that is configured for the small number of inputs 35 and outputs required at controller, 39."). Harvey *et al.* also disclosed "on/off" switches used "to interrupt or disconnect programming transmissions at stations that lack authorizing information or are determined in other fashions not to be duly authorized." *See id.* at col. 157, lines 7-12. Those switches are variously used to make, break or change the connections in an electric circuit consistent with the general understanding of "switch" discussed above.

The primary dispute between the parties is whether a multiplexer may be considered a matrix switch. Had this term been construed under § 112(6), and had the "corresponding" structure been identified as a matrix switch, the dispute would have necessitated construction of that term. However, because this limitation is not construed under § 112(6), that issue need not be addressed here.

Finally, the foregoing construction applies to the term "switch means" as it appears in claim 2, as well.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The "switch means * * *" limitation found in claims 1 and 2 should not be construed as a means-plus-function limitation under § 112(6). A "switch" is a device used for opening, closing, or changing the connections in a circuit.

4. "detector means"

The disputed limitation is found in claims 1 and 2. Claim 1 is representative, and is reproduced in pertinent part below, with the disputed term in boldface:

1. In a signal processing system,

a plurality of receiver/distribution means * * *,

a switch means * * *,

a plurality of **detector means** for detecting control signals respecting said programming,

a first processor means * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[If] § 112(6) applies, the recited function of "detector means" is for "detecting control signals respecting said programming." The corresponding structure disclosed in the specification is a digital detector (e.g., see digital detectors 34, 37, 38, 43 and 46 of Figures 2A-2C of the '825 and '490 patents) and equivalents known at the time the patent issued.

[If § 112(6) does not apply,] a detector, as that term is generally understood by persons of ordinary skill in this art.

Post-Hearing: 35 U.S.C. § 112(6) does not apply to "detector means." The term "detector means" should be construed to mean "a detector, as that term is generally understood by persons of ordinary skill in the art."

If 35 U.S.C. § 112(6) applies, then the functional recitation is "for detecting control signals respecting said programming." The corresponding structures included digital detectors 34, 37, 38, 43 or 46, as well as equivalents known at the time the patent issued.

DEFENDANTS' PROPOSED CONSTR.

[If] 35 U.S.C. § 112, ¶ 6 applies to this term, the functional recitation is "for detecting control signals respecting said programming." [The corresponding structure is] digital detectors 34, 37, 38, 43 and 46 and electrical conductors connecting their outputs to controllers 39, 44, and 47, respectively, as shown in Figs. 2A, 2B, 2C and 2D, and equivalents."

[If] § 112, ¶ 6 does not apply, "plurality of detector means" should be construed to mean a "plurality of detectors." A detector is defined as "a device such as a rectifier or demodulator."

Post-Hearing: The term "plurality of detector means" should be construed under 35 U.S.C. § 112(6). The corresponding structures disclosed in the specification are "digital detectors 34, 37, 38, 43, and 46, as shown in Figs. 2A, 2B, 2C, and 2D, and equivalents. However, there is no enabling disclosure of a digital detector in the '414 patent.

If 35 U.S.C. § 112, ¶ 6 does not apply, the "plurality of detector means" should be construed to mean a "plurality of control signal detectors" as

that term would have been generally understood by persons of ordinary skill in the art at the time of the alleged invention in 1987. In 1987, one of ordinary skill would have understood "plurality of detector means" to mean "a plurality of detectors."

Plaintiffs' Harvey IV Chart at 10; Defendants' Harvey IV Chart at 10-11; Joint Summary at 16-17.

The parties urge that the construction of "detector means" should apply to that term as it appears in claim 2.

According to the JCCS, the parties dispute whether § 112(6) applies, but agree that if it does, then the function is "for detecting control signals respecting said programming." However, the parties would then dispute the interpretation of that function, as well as the corresponding structure. If § 112(6) does not apply, then the parties dispute the proper definition of the term. JCCS at 4.

The plaintiffs urge that "detector means" should not be construed under § 112(6). According to the plaintiffs, the term "detector" connotes sufficient structure to avoid the ambit of § 112(6), and that the Federal Circuit agrees. The plaintiffs argue in the alternative that if the disputed term is construed under § 112(6), then the corresponding structures are digital detectors 34, 37, 38, 43 and 46, but not the "electrical conductors connecting their outputs to controllers" urged by the defendants because the recitation clearly refers to detecting the incoming signals, and does not speak to the outputting of the detected signals from the detector from another component for further processing. Plaintiffs' Opening *Markman* Brief at 31-35.

b) Discussion

The disputed limitation uses the word "means" followed by a recitation of function, and should thus presumptively be construed under § 112(6). As with "switch means," though, "detector" connotes sufficient structure to one of ordinary skill in the art to avoid the ambit of § 112(6), as evidenced by various references at hand. For example, the ILLUSTRATED DICTIONARY OF ELECTRONICS 132 (3rd ed. 1985) defines "detector" as "1. Demodulator. 2. A device which senses a signal or condition and indicates its presence." The 8th edition (2001) of the same dictionary main-

tains the same definition.²⁹ Another reference, namely, MERRIAM-WEBSTER'S COLLEGiate DICTIONARY ____ (10th ed. 1999), explains that a "detector" is "one that detects, as [1] a device for detecting the presence of electromagnetic waves or of radioactivity [2] a rectifier of high-frequency current used esp. for extracting the intelligence from a radio signal." Another dictionary of that vintage provides a somewhat lengthier definition for "detector:"

1. A device for effecting the process of detection or demodulation.
2. A mixer or converter in a superheterodyne receiver.
3. A device that produces an electrical output that is a measure of the radiation incident on the device.
4. A rectifier tube, crystal, or dry disc by which a modulation envelope on a carrier or the simple on-off state of a carrier may be made to drive a lower-frequency device.
5. A device that converts light signals from optical fibers to electrical signals that can be further amplified to allow reproduction of the original signal.
6. A device that converts optical power to other forms. *See* photodetector.

MODERN DICTIONARY OF ELECTRONICS 188 (7th ed. 1999). Clearly, the term "detector" connotes sufficient structure to rebut the presumption arising from the word "means."

Significantly, the Federal Circuit agrees. In *Personalized Media*, 161 F.3d at 704, the Federal Circuit construed the term "digital detector" as called for in Harvey VI (various terms of which are construed separately below). According to the Federal Circuit, "'[d]etector' is not a generic structural term such as 'means,' 'element,' or 'device; nor is it a coined term lacking clear meaning * * *. Instead, * * * 'detector' had a well-known meaning to those of skill in the electrical arts * * *." *Id.* The Federal Circuit noted with approval a Webster's dictionary definition, namely, "'(1): a device for determining the presence of a signal (2): a rectifier of high-frequency current (as a cat whisker and crystal or a vacuum tube) (3): a device for extracting the intelligence from a signal (4) DEMODULATOR 1.'" *Id.* at 705 n.12. The Federal Circuit explained that "[e]ven though the term 'detector' does not specifically evoke a particular structure, it does convey to one knowledge-

²⁹ The 8th edition does, however, provide a more expanded definition (1), namely, "1. In radio communications, a device or circuit that extracts the information from a modulated carrier. Also sometimes called a *demodulator*."

able in the art a variety of structures known as ‘detectors,’ ” and concluded that “the term ‘detector’ is a sufficiently definite structural term to preclude the application of § 112, ¶6.” *Id.* at 705.

The parties apparently do not dispute what a “detector” is, nor do they proffer proposed constructions for “detector” *per se*, although the defendants’ expert, Dr. Ciciora opined (at least prior to the *Markman* hearing) that a “control signal detector means,” if not construed under § 112(6), means “a device for determining the presence of a signal embedded within programming that allows one to regulate.” Defendants’ Opening *Markman* Brief, Exh. 27: Decl. of Dr. Ciciora at ¶ 50.³⁰ Broadly speaking, though, a “detector” is simply something that is capable of performing the function of detecting, as the above definitions suggest, and that is the meaning in the context of the claims. That is, a “detector” in the context of the claims is a device for determining the presence of a signal. Furthermore, the specification appears to use the term “detector” in that sense.

Fig. 2A, for example, depicts detectors 34, 37 and 38:

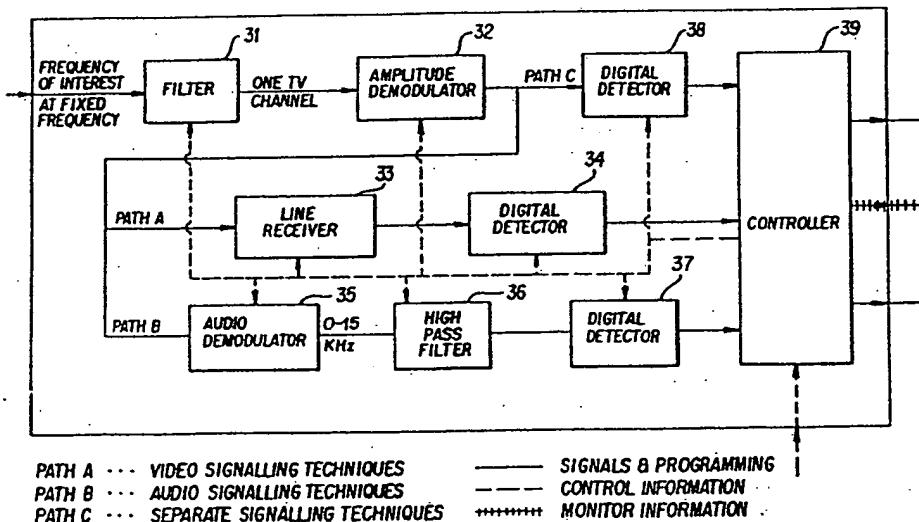


FIG. 2A

Harvey *et al.* explain that “line receiver, 33, receives the information of one or more of the lines normally used to define a television picture *** and passes said information to a digital detector, 34, which acts to detect the digital signal information embedded in said information, using standard de-

³⁰ The term “control signal detector means” is separately construed below.

tection techniques well known in the art, and inputs detected signal information to controller, 39, * * *. The second path, designated B, detects signal information embedded in the audio information portion of said television channel signal. Path B inputs to a standard audio demodulator, 35, which uses demodulator techniques, well known in the art, to define the television audio transmission and transfers said audio information to high pass filter, 36. Said filter, 36, defines and transfers to digital detector, 37, the portion of said audio information that is of interest. The digital detector, 37, detects signal information embedded in said audio information and inputs detected signal information to controller, 39. The third path, designated C, inputs the separately defined transmission to a digital detector, 38, which detects signal information embedded in any other information portion of said television channel signal and inputs detected signal information to controller, 39.” [Emphasis added.] *Id.* at col. 21, lines 30-55.

Even so, the defendants assert that “there is no enabling disclosure of a digital detector” in Harvey IV. *See* Defendants’ Reply Brief at 12. The defendants rely on Dr. Ciciora’s declaration that:

29. One of ordinary skill in the art would not have understood what was meant by [the] term “plurality of detector means for detecting control signals” because claims 1 and 2 of the ‘414 patent do not recite where the control signals originate or are created or what they individually are intended to control. Without these details, one of ordinary skill in the art would not be able to proceed with implementation. No amount of experimentation would suffice since there is no teaching of the expected result of the use of a control signal.

30. The corresponding blocks in the block diagram for the claimed “plurality of detector means” that would appear to be linked to the claimed function of detecting control signals are the digital detectors 34, 37, 38, 43, and 46 and electrical conductors connecting their inputs to controllers 39, 44, and 47, respectively. *See* Figs. 2A, 2B, 2C and 2D of [Harvey IV].

Defendants’ Opening *Markman* Brief, Exh. 27: Decl. of Dr. Ciciora at ¶¶ 29-30. Whether a patent specification provides adequate enablement support requires an analysis, however, that goes well beyond what the defendants have submitted. *See, e.g., Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1330-31 (Fed. Cir. 2003)(discussing written description and enablement requirements). For example, whether a patent specification would enable one of ordinary skill in the art to practice an invention without undue experimentation, namely, whether the specification contains an enabling disclosure, requires the Court to consider several factors such as (1) the quantity of experimentation

necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. *See In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). Here, Dr. Ciciora either fails to address those factors, or addresses them, *i.e.*, the level of experimentation necessary, only cursorily. Dr. Ciciora does not, for example, evaluate whether or what amount guidance is provided by the 300+ columns of Harvey IV's specification. In all, the present record simply does not permit an enablement analysis. Dr. Ciciora has not otherwise provided any treatise or other objective support for his conclusion. *See* Advisory Committee Notes, 2000 Amendments, Rule 702, FED. R. EVID. ("The trial court's gate-keeping function requires more than simply 'taking the expert's word for it.'"). In all, Dr. Ciciora's opinions, rather than address the foregoing factors, provide little more than conclusions, and thus cannot meet the defendants' burden.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The limitation "detector means * * *" in claims 1 and 2 should not be construed as a means-plus-function limitation under § 112(6). In the context of claims 1 and 7, a "detector" is a device for determining the presence of a signal.

5. "first processor means"

The disputed limitation is recited in claims 1 and 2. Claim 1 is representative, and is reproduced in pertinent part below, with the disputed term in boldface:

1. In a signal processing system,

- a plurality of receiver/distribution means for * * *,
- a switch means for * * *,
- a plurality of detector means * * *,

a first processor means operatively connected to said plurality of detector means for identifying each detected control signal as having been detected by a particular detector means,

a storage means * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[If] § 112(6) applies, the recited function of "first processor means" is "for identifying each detected control signal as having been detected by a particular detector means." The corresponding structure disclosed in the specification is a processor or controller (see, e.g., [Harvey III], controller 20 of Figure 2, controller 39 of Figure 2A, signal processor 26 of Figure 2D; signal processor 71 of Figure 6A, and computer 73 of Figure 6C; and '490 Patent, controller 20 of Figure 1, signal processor 71 of Figure 3A, computer 73 of Figure 3C, and signal processor 130 of Figure 5) and equivalents known at the time the patent issued.

[If § 112(6) does not apply,] "Processor Means" should not be interpreted under § 112 ¶6, and means "a digital electronic device that processes information by operating on data according to instructions."

Post-Hearing: 35 U.S.C. § 112(6) does not apply to "processor means." The term "first processor means" should be construed to mean "a digital electronic device that processes information by operating on data according to instructions."

However, if § 112(6) applies, the functional recitation is "identifying each detected control signal as having been detected by a particular detector means." The corresponding structures include a processor or computer, as well as equivalents known at the time the patent issued. (See, e.g., '825 Patent, signal processor 200 of Figure 4, signal processor 200 and microprocessor 205 of

DEFENDANTS' PROPOSED CONSTR.

If § 112, ¶ 6 applies, the function should be a verbatim recitation of the claim language. The specification only discloses general purpose computer hardware for performing the required functions. There is no disclosure of software or specific algorithms for carrying out the recited functions. Consequently, there is insufficient written description for the processor means to perform the recited functions, and claim 1 is invalid under 35 U.S.C. § 112, ¶ 1.

If § 112, ¶ 6 does not apply, the parties agree that "processor" should be defined as "a digital electronic device that processes information by operating on data according to instructions."

Post-Hearing: "[F]irst processor means" is a means-plus-function limitation pursuant to 35 U.S.C. § 112, ¶6. The function is "identifying each detected control signal as having been detected by a particular detector means." The specification fails to provide sufficient written description for any corresponding structure.

If § 112, ¶6 does not apply, then "first processor means" should be construed as that term would have been generally understood by persons of ordinary skill in the art at the time of the alleged invention in 1987. In 1987, one of ordinary skill in the art would have understood the term "processor means" as a digital electronic device that processes information by operating on data according to instruction. See *Webster's Ninth New Collegiate Dictionary* (1984) p. 938 (definition of "processor"). Nevertheless, claims 1 and 2 are still invalid under § 112, ¶1, since there is no written de-

Figure 5, signal processor 71 and computer 73 of Figure 6A, microcomputer 205 and signal processor 200 of Figure 7; in the '490 Patent, signal processor 71 of Figure 3A, computer 73 of Figure 3B, and microcomputer 205 of Figure 6G.)

scription of the software required to program the computer to perform the required functions.

Plaintiffs' Harvey IV Chart at 18-19; Defendants' Harvey IV Chart at 13; Joint Summary at 19-20.

The parties urge that the construction of "first processing means" should apply to that term as it appears in claim 2.

According to the JCCS, the parties dispute whether § 112(6) applies, but if it does, then the parties dispute the interpretation of the function, as well as the corresponding structure. If § 112(6) does not apply, then the parties agree that "processor" should be defined as "a digital electronic device that processes information by operating on data according to instructions." JCCS at 4.

The defendants urge that the disputed terms should be construed under § 112(6). According to the defendants, the plaintiffs identify the corresponding structure as any processor or controller, "even one that does not perform the recited function." The defendants urge that because the specification does not "disclose any algorithm or software for performing the required function" claim 1 is "fatally indefinite." Defendants' Opening *Markman* Brief at 43-44.

b) Discussion

The disputed limitation uses the word "means" followed by a recitation of function, and should thus presumptively be construed under § 112(6). However, the disputed limitation clearly recites sufficient structure, namely, a "processor," to avoid construction as a means-plus-function under § 112(6), as a number of resources at hand confirm.

For example, the MODERN DICTIONARY OF ELECTRONICS 781 (6th ed. 1984) explains that a "processor" is:

1. In hardware, a data processor.
2. In software, a computer program that includes the compiling, assembling, translating, and related functions for a particular, programming language, including logic, memory, arithmetic, and control.

3. A unit in the programmable controller which scans all the inputs and outputs in a predetermined order. The processor monitors the status of the inputs and outputs in response to the user programmed instructions in memory, and it energizes or deenergizes outputs as a result of the logical comparisons made through these instructions.
4. A computer or part of a computer capable of receiving data, manipulating it and supplying results.

The ACADEMIC PRESS DICTIONARY OF SCIENCE AND TECHNOLOGY 1730 (1992) defines “processor” as “a device that interprets and executes instructions.” Another source, the MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS ____ (5th ed. 1994), defines that term as “[a] device that performs one or more many functions, usually a central processing unit” and “[a] program that transforms some input into some output, such as an assembler, compiler, or linkage editor.” In all, those sources clearly suggest that an artisan would understand the term “processor” to connote structure sufficient to rebut the presumption that § 112(6) applies. Furthermore, those resources indicate that the customary understanding of “processor” has not changed much, if at all, over the last two decades.

The parties agree that if the disputed limitation is not construed under § 112(6), then the term “processor” should be construed as “a digital electronic device that processes information by operating on data according to instructions” – which, of course, further supports that the term connotes structure. That proposed construction is well supported by the definitions discussed above, and there is no dispute that Harvey *et al.* used the term “processor” according to its customary meaning. For example, Harvey *et al.* explain that in their invention, “particular signal processing apparatus (hereinafter called the ‘signal processor’) detect signals and, in accordance with instructions in the signals and preprogramming in the signal processor, decrypt and/or record and/or control station apparatus by means of the signals and/or discard the signals.” Harvey IV, col. 10, lines 25-30. Accordingly, the parties’ agreed construction is adopted.

The defendants nevertheless urge that the term "processor" lacks support in the specification "since there is no written description of the software required to program the computer to perform the required functions." The defendants rely on their expert, Dr. Ciciora, who opined:

34. No software or specific algorithms are disclosed in [Harvey IV] for "identifying each detected control signal as having been detected by a particular detector." The function is not described in sufficient specificity to allow one of ordinary skill in the art to write or design algorithms. No amount of experimentation would suffice since the objectives of that experimentation are not taught.

35. Assuming that "first processor means" in claims 1 and 2 does convey sufficient structure for performing the claimed function, one of ordinary skill in the art in 1987 would have understood "processor" to mean "the part of the computer that operates on data for identifying each detected control signal as having been detected by a particular detector means," * * *. However, even this definition does not provide sufficient specificity to allow one of ordinary skill in the art to write software or design algorithms.

Defendants' Opening *Markman* Brief, Exh. 27: Decl. of Dr. Ciciora at ¶¶ 34-35.

Whether or not the specification provides adequate written description or enablement support is an issue that goes beyond the current scope of the parties' submissions as discussed above. Accordingly, whether the specification provides adequate support under § 112(1) will not be decided here.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that

The limitation "first processor means * * *" called for in claims 1 and 2 should not be construed as a means-plus-function limitation under § 112(6). A "processor" is a digital electronic device that processes information by operating on data according to instructions.

6. "storage means"

This term appears in claim 1, which is reproduced below in pertinent part, with the disputed term in boldface:

1. In a signal processing system,
 - a plurality of receiver/distribution means * * *,
 - a switch means * * *,
 - a plurality of detector means * * *,
 - a first processor means * * *,
 - a storage means** for receiving and storing said detected control signals, and
 - a second processor means * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Storage means" should be construed under § 112 ¶6. The recited functions are "receiving and storing said detected control signals." The corresponding structures disclosed in the specification are "a RAM or a PRAM, and equivalents thereof that were known at the time the patent issued."

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

35 U.S.C. § 112, ¶ 6 applies to this term, and [] the functional recitation is "for receiving and storing said detected control signals." [The corresponding structure is] "buffer/comparator 8, buffer/comparator 14, and digital recorder 16, and equivalents thereof."

Post-Hearing: "[S]torage means" should be construed under 35 U.S.C. § 112, ¶6 to mean "buffer/comparator 8, buffer/comparator 14, and digital recorder 16, and equivalents thereof."

Plaintiffs' Harvey IV Chart at 21; Defendants' Harvey IV Chart at 15; Joint Summary at 20-21.

According to the JCCS, the parties agree that § 112(6) applies, and that the function is "receiving and storing said detected control signals." However, the parties would then dispute the corresponding structure. JCCS at 4.

b) Discussion

This limitation, as well, uses the word "means" followed by a recitation of function, and a presumption therefore arises in favor of construction under § 112(6). However, as with other "means" limitations construed above, the disputed limitation appears to recite sufficient structure for performing that function, namely, "storage," to rebut that presumption.

The references at hand indicate that the term "storage" has long held a structural connotation in the computer and electronic arts. For example, the IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONIC TERMS 683 (2d ed. 1977), defines "storage" in the field of electronic computation as follows:

- (1) The act of storing information.
- (2) Any device in which information can be stored, sometimes called a memory device.
- (3) In a computer; a section used primarily for storing information. Such a section is sometimes called a memory or store (British).

Notes: (A) The physical means of storing information may be electrostatic, ferroelectric, magnetic, acoustic, optical, chemical, electronic, electric, mechanical, etcetera, in nature. (B) Pertaining to a device in which data can be entered, in which it can be held, and from which it can be retrieved at a later time. *See also:* store.

Another source, the ILLUSTRATED DICTIONARY OF MICROCOMPUTERS 221, 373 (3rd ed. 1990), explains that "storage" is "[a] device or medium on which or into which data can be entered, held, and retrieved later; a memory. Storage may use electrostatic, magnetic, acoustic, optical, electronic, or mechanical methods," and that the term "storage" is interchangeable with the term "memory." *See also* MODERN DICTIONARY OF ELECTRONICS 737 (7th ed. 1999); and McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS 2038(6th ed. 2003). Thus, "storage" has a structural meaning to one of ordinary skill in the art sufficient to rebut the presumption that arises from the word "means." Accordingly, "storage means" should not be construed under § 112(6), but should simply be construed to mean any device in which information can be stored.

Furthermore, Harvey *et al.* used the term consistently with its customary meaning. In connection with Fig. 2, for example:

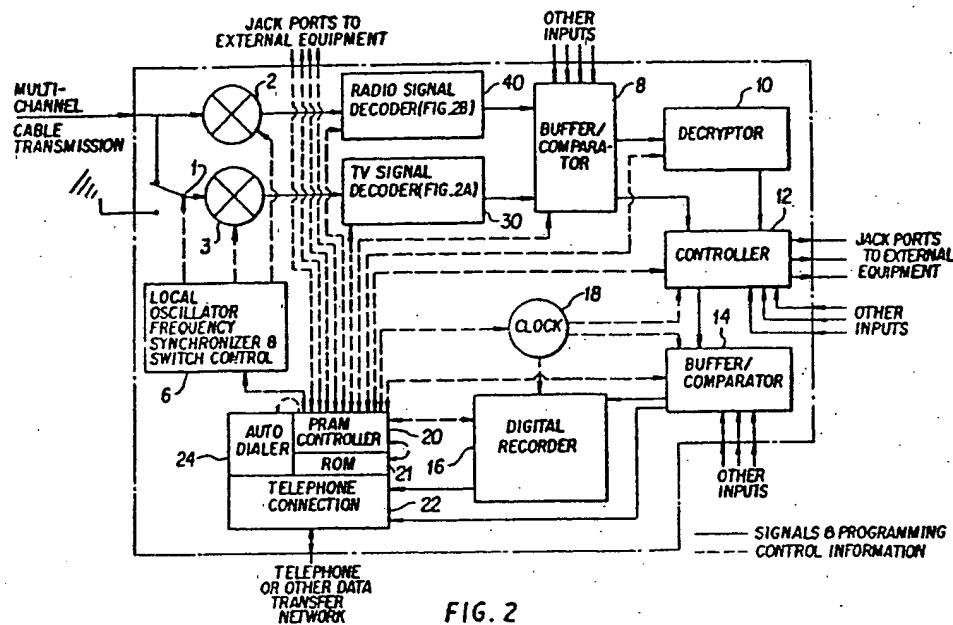


FIG. 2

Harvey *et al.* explain that “[d]igital recorder, 16, is a memory storage element of standard design that receives information from buffer/comparator, 14, and records said information in a predetermined fashion.” Harvey IV, col. 20, lines 15-18 (emphasis added).

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The limitation “storage means * * *” in claim 1 should not be construed as a means-plus-function limitation under § 112(6). “Storage” means a device in which information can be stored.

7. "second processor means"

As with the term "first processor means," the disputed limitation appears in claims 1 and 2. Claim 1 is again selected as representative, and is reproduced in pertinent part below, with the disputed term in boldface:

1. In a signal processing system,
 - a plurality of receiver/distribution means * * *,
 - a switch means * * *,
 - a plurality of detector means * * *,
 - a first processor means * * *,
 - a storage means * * *, and
 - a second processor means** for controlling the output directing function of said switch means.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[If] § 112(6) applies, the recited function for "second processor means" is "for controlling the output directing function of said matrix switch means." The corresponding structure disclosed in the specification is a processor or computer (*see, e.g.*, '825 Patent, signal processor 200 of Figure 4, signal processor 200 and microcomputer 205 of Figure 5, signal processor 71 and computer 73 of Figure 6A, microcomputer 205 and signal processor 200 of Figure 7; and '490 Patent, signal processor 71 of Figure 3A, computer 73 of Figure 3B, and microcomputer 205 of Figure 6G) and equivalents known at the time the patent issued.

[If § 112(6) does not apply,] "Second Processor Means" should be given the same definition as "Processor Means" above, and that the functional language comprises common English

DEFENDANTS' PROPOSED CONSTR.

If § 112, ¶ 6 applies, the function should be a verbatim recitation of the claim language. [The corresponding structure is] "cable program controller and computer 73 configured to control the switching functions of the 'matrix switch means,' the outputs of which are connected to control inputs of the 'matrix switch means,' and equivalents thereof." However, the specification only discloses general purpose computer hardware for performing the required functions. There is no disclosure of software or specific algorithms for carrying out the recited functions. * * * * Consequently, there is insufficient written description for the processor means to perform the recited functions, and claim 1 is invalid under 35 U.S.C. § 112, ¶ 1.

If § 112, ¶ 6 does not apply, the parties agree that "processor" should be defined as "a digital electronic device that processes information by

words requiring no specific definition.

Post-Hearing: 35 U.S.C. § 112(6) does not apply to "processor means." The term "second processor means" should be construed to mean "a digital electronic device that processes information by operating on data according to instructions."

However, if § 112(6) applies, the functional recitation is "controlling the output directing function of said switch means." The corresponding structures include a processor or computer, as well as equivalents known at the time the patent issued. (See, e.g., '825 Patent, signal processor 200 of Figure 4, signal processor 200 and microprocessor 205 of Figure 5, signal processor 71 and computer 73 of Figure 6A, microcomputer 205 and signal processor 200 of Figure 7; in the '490 Patent, signal processor 71 of Figure 3A, computer 73 of Figure 3B, and microcomputer 205 of Figure 6G.)

operating on data according to instructions."

Post-Hearing: "[S]econd processor means" should be construed under 35 U.S.C. 112, ¶6. The function is "controlling the output directing function of said switch means." The corresponding structure is "cable program controller and computer 73 configured to control the switching functions of the 'matrix switch means,' the outputs of which are connected to control inputs of the 'matrix switch means,' and equivalents thereof." However, this is not sufficient structure since no algorithm or software is disclosed.

If § 112, ¶6 does not apply, then "second processor means" should be construed as that term would have been generally understood by persons of ordinary skill in the art at the time of the alleged invention in 1987. In 1987, one of ordinary skill in the art would have understood the term "processor means" as a digital electronic device that processes information by operating on data according to instruction. See *Webster's Ninth New Collegiate Dictionary* (1984) p. 938 (definition of "processor"). Nevertheless, claims 1 and 2 are still invalid under § 112, ¶1, since there is no written description of the software required to program the computer to perform the required functions.

Plaintiffs' Harvey IV Chart at 26-27; Defendants' Harvey IV Chart at 16; Joint Summary at 21-22.

The parties urge that the construction of "second processor means" should apply to that term as it appears in claim 2.

According to the JCCS, the parties dispute whether § 112(6) applies, but agree that if it does, then the function should be a "verbatim recitation of the claim language." However, the parties would then dispute the interpretation of that function, as well as the corresponding structure. If § 112(6) does not apply, then the parties agree that "processor" should be defined as "a digital electronic device that processes information by operating on data according to instructions." JCCS at 5.

Defendants urge that the disputed term is a means-plus-function limitation; and that the disclosure of a generic block element, i.e., "cable program controller and computer 73 in Figs. 6a and 6b," is a fatal lack of detail regarding the algorithm or software. Defendants' Opening *Markman* Brief at 46.

b) Discussion

The issues here are precisely the same as with the term "first processor means," construed above. As discussed there, the term "processor means" should not be construed under § 112(6) because the term "processor" connotes sufficient structure to one of ordinary skill in the art to rebut the presumption raised by use of the word "means" that § 112(6) applies. Also as discussed above, the special master agrees with the parties' proposed construction of the term "processor." The issue of written description support cannot be, and is not, addressed here based on the parties' current submissions.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that

The limitation "second processor means * * *" in claims 1 and 2 should not be construed as a means-plus-function limitation under § 112(6). A "processor" is a digital electronic device that processes information by operating on data according to instructions.

8. **"buffer/memory storage means"**

This term appears in claim 2, which is reproduced in pertinent part below, with the disputed term in boldface:

2. In a signal processing system,

* * *

a **buffer/memory storage means** for receiving and storing said detected control signals, * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[same as for "storage means," above]

Post-Hearing: [not addressed]

DEFENDANTS' PROPOSED CONSTR.

35 U.S.C. § 112, ¶ 6 applies to this term, and [] the functional recitation is "for receiving and storing said control signals." [The corresponding structure is] "buffer/comparator 8, buffer/comparator 14, and digital recorder 16, and equivalents thereof."

Post-Hearing: [not addressed]

Plaintiffs' Harvey IV Chart at 29-30, and Defendants' Harvey IV Chart at 32-33.

According to the JCCS, the parties agree that § 112(6) applies, and that the recited function is "for receiving and storing said detected controls signals." However, the parties would then dispute the interpretation of that function, as well as the corresponding structure. JCCS at 5.

In their post-*Markman* hearing Joint Summary, the parties did not mention this term. Thus, the parties' pre-hearing proposed constructions are understood to reflect their final positions.

b) Discussion

This term, as well, uses the word "means" followed by a recitation of function, and should thus presumptively be construed under § 112(6). As discussed in connection with "storage means" above, however, the term "storage" connotes sufficient structure to one of ordinary skill in the art to avoid the ambit of § 112(6). The words "buffer/memory" do not change that outcome, but simply indicate what sort of "storage" is claimed. Indeed, the terms "buffer" and "memory" convey further structure. *See, e.g.*, MODERN DICTIONARY OF ELECTRONICS 86-7, 464 (7th ed. 1999)(defining "buffer" as, *inter alia*, "a storage device used to compensate for a difference in the rate of flow of information or the time or occurrence of events when transmitting information from one device to another," and "memory" as, *inter alia*, "that part of a computer that holds data and instructions."). In any case, the parties do not dispute what "buffer/memory" means, and, as discussed above, Harvey *et al.* used the term "storage" according to its customary meaning.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The limitation "buffer/memory storage means ***" in claim 2 should not be construed as a means-plus-function limitation under § 112(6).

9. "matrix switch means"

The disputed term appears in asserted claims 7, 9 and 10, as follows:

7. In a signal processing system,

a receiver/distribution means ***,

a matrix switch means for receiving said programming from said receiver/distributor means and for directing selected portions of said received programming to a broadcast transmission means,

a control signal detector means ***

9. In a multichannel television distribution system,

a receiver/distributor means ***, a matrix switch means for receiving said programming from said receiver/distributor means and for directing selected portions of said received programming to a recording device operatively connected to a multichannel television distribution means,

a control signal detector means ***

10. In a multichannel television distribution system,

a receiver/distributor means ***,

a matrix switch means for receiving said programming from said receiver/distributor means and for directing selected portions of said received programming to a multichannel television distribution means,

a control signal detector means ***

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[If] § 112(6) applies, the recited function of "matrix switch means" in Claim 7 is "for receiving said programming from said receiver/distributor means and for directing selected portions of said received programming to a broadcast transmission means." The corresponding structure disclosed in the specification is a matrix switch (*e.g.*, see '825 Patent, matrix switch 75 of Figures 6A-6B and matrix switch 75 of Figures 3B-3C) and equivalents known at the time the patent issued.

"Matrix Switch Means" should not be interpreted under § 112, ¶ 6, and should instead be construed as "an electronically controllable device having multiple inputs and multiple outputs, capable of interconnecting any given input with any given output."

Post-Hearing: 35 U.S.C. § 112(6) does not apply to "matrix switch means." The term should be construed to mean an electronically controllable device having multiple inputs and multiple outputs, capable of interconnecting any given input with any given output.

If 35 U.S.C. § 112(6) applies, then the functional recitation is "for receiving said programming from said receiver/distributor means and for directing selected portions of said received programming to a broadcast transmission means." The corresponding structures include "matrix switch 75, as well as equivalents known at the time the patents issued."

DEFENDANTS' PROPOSED CONSTR.

[If] § 112, ¶ 6 applies, the functional recitation should be "for receiving said programming from said receiver/distributor means and for directing selected portions of said received programming to a broadcast transmission means. [The corresponding structure is] "a matrix switch 75, having a plurality of vertical paths, a plurality of horizontal paths, and electromagnetically-operated mechanical means for interconnecting any one of the vertical paths with any one of the horizontal paths, the inputs of which are connected to the outputs of the 'receiver/distribution means,' and the outputs which are connected to an over-the-air transmission distribution means and equivalents thereof, and not including a multiplexer, which has two or more inputs and a single output." [Defendants' emphasis.]

[If] § 112, ¶ 6 does not apply, "matrix switch means" should be construed to mean "a switch having a plurality of vertical paths, a plurality of horizontal paths, and electromagnetically-operated mechanical means for interconnecting any one of the vertical paths with any one of the horizontal paths, and not including a multiplexer, which has two or more inputs and a single output."

Post-Hearing: S-A proposes that "matrix switch means" be given the same meaning as "switch means," *i.e.*, that the "switch means" is "a matrix switch 75, having a plurality of vertical paths and a plurality of horizontal paths for interconnecting any one of the vertical paths with any one of the horizontal paths, the inputs of which are connected to the outputs of the 'receiver/distributor means,' and the outputs of which are connected to an associated output device and equivalents thereof, and not including a multiplexer, which has two or more inputs and a

single output.

If § 112(6) does not apply, "matrix switch means" is "a switch having a plurality of vertical paths and a plurality of horizontal paths for interconnecting any one of the vertical paths with any one of the horizontal paths, and not including a multiplexer, which has two or more inputs and a single output."

Plaintiffs' Harvey IV Chart at 31-32; Defendants' Harvey IV Chart at 40-41; Joint Summary at 18-19.

The parties urge that the construction of "matrix switch means" should apply to that term as it appears in claim 9.

According to the JCCS, the parties dispute whether § 112(6) applies, but agree that if it does, then the function is "for receiving said programming from said receiver/distributor means and for directing selected portions of said received programming to a broadcast transmission means." However, the parties would then dispute the interpretation of that function, as well as the corresponding structure. If § 112(6) does not apply, then the parties dispute the proper definition of the term. JCCS at 5-6.

According to the plaintiffs, the term "matrix switch means" should not be interpreted under § 112(6) because one of ordinary skill in the art would understand the term to mean "an electronically controllable device having multiple inputs and multiple outputs, capable of interconnecting any given input with any given output." The plaintiffs further point out that although the defendants urge that "matrix switch" does not suggest specific structures, "they had no problem finding exemplary matrix switches that were allegedly well-known in the art at the time [Harvey IV] issued," and that to argue that "matrix switch means" does not suggest particular structures "simply strains credibility."

According to the plaintiffs, a matrix switch can be implemented as a hardware switch, or in digital technology. If, however, the disputed term is construed under § 112(6), the plaintiffs contend that the corresponding structure is simply "matrix switch 75" and known equivalents. Furthermore, the plaintiffs urge that the matrix switch should not be limited to a "cross bar switch," and that "a

multiplexer should be included in the definition of this term because such devices are capable of performing matrix switch functions." As for the defendants' exclusion from the corresponding structure of "multiplexing system 92," the plaintiffs urge that the "[d]efendants' reference to the downstream multiplexer system 92 is inapposite because what is at issue is the upstream matrix switch 75." According to the plaintiffs, there is nothing in the specification of the asserted patents, nor in the inherent functionality of a multiplexer, that would necessarily prevent the multiplexer from performing a matrix switching function if it were so configured. As support, the plaintiffs provide dictionary definitions and examples of hardware implementing a multiplexer as a matrix switch. Additionally, the plaintiffs contend that the defendants improperly focus on the output of the multiplexer as the basis for excluding it from the definition of "matrix switch" but fail to recognize that a matrix switch involves both multiple inputs and outputs. According to the plaintiffs, a person of skill in the art at the time Harvey IV issued would understand that a multiplexer device could be configured, using known time-division multiplexing techniques, to perform a de-multiplexing function or a multiplexing function, and that if configured for the de-multiplexing function, the multiplexer could take the several component parts of the de-constructed signal, and choose which of them to "switch" for the eventual output--which the plaintiffs say is consistent with the disclosure of the matrix switch 75 in Harvey IV. Nothing, the plaintiffs urge, "inherently limits a multiplexer to providing a single output." The plaintiffs contend that a multiplexer could also be configured to provide multiple outputs of combined signals, and that the defendants know that to be true because, according to the plaintiffs, the defendants knowingly failed to cite the full IEEE dictionary definition of "multiplexer," which states that a multiplexer can function as a "multi-position switch" under the control of a computer "that allows for the selection of any one of a number of analog signals." Plaintiffs' Opening *Markman* Brief at 19-25.

The defendants urge that the disputed term is a means-plus-function limitation for which the corresponding structure is the same as that described with respect to "switch means" in claim 1, except that the "matrix switch means" is connected to "a broadcast transmission means." Defendants' Opening *Markman* Brief at 47-48.

The plaintiffs reply that the defendants' position is "untenable" because they urge, on the one hand, that "matrix switch" does not "connote specific structures," but on the other hand point

to "many matrix switch structures that allegedly require [limitation] to a mechanical 'cross-bar' switch." The plaintiffs also dispute the defendants' argument that the corresponding structure must "include connections to the outputs of the 'receiver/distributor means' and inputs of 'an over-the-air transmission distribution means,'" because the claim "only requires that the 'Matrix Switch Means' be 'for receiving programming' from the receiver/distributor means, not that it be directly connected to it," and neither the claims nor specification mention "an over-the-air transmission distribution means." Plaintiffs' Reply Brief at 14-15.

The defendants reply that the specification distinguishes between a "matrix switch" and a "multiplexer," "and never equates the two," and neither do dictionaries. According to the defendants, the plaintiffs offer only Dr. Bovik's opinion and "citations to Internet sites that say nothing about how the term 'matrix switch' was understood in 1987." Defendants' Reply Brief at 10.

The parties' respective post-Hearing *Markman* briefs generally reiterate the above arguments. See Plaintiffs' Post-Hearing *Markman* Brief at 7-11; Defendants' Post-Hearing *Markman* Brief at 14-17.

b) Discussion

The disputed limitation uses the word "means" followed by a recitation of function, and should thus presumptively be construed under § 112(6). However, the parties' dispute over whether the definition of "matrix switch," in light of the parties' submissions, suggests that the term "matrix switch" may connote sufficient structure to one of skill in the art to rebut the presumption. In any case, the dispute boils down to the definition of "matrix switch," regardless of whether this term is construed under § 112(6) or not. That, is not, of course, to avoid the issue of whether this term should be construed as a means-plus-function limitation; however, determining whether sufficient structure exists to rebut the presumption necessarily involves defining, to some degree, the term "matrix switch."

Although a precise universal definition of a "matrix switch" has proved somewhat elusive, it appears that, at least currently, the term is well recognized in the field of electronics. For example, the website for JFW Industries, Inc. of Beech Grove, Indiana prominently announces "Matrix Switches / Test Systems / Attenuator Assemblies" and lists "Matrix Switches" as one of several

"product categories."³¹ JFW's matrix switch product catalog displays the following specifications for its GPIB Matrix Switch:

GPIB Matrix Switch

Model	Configuration	Control	Impedance	Frequency Range	VSWR
50MS-141	4 x 8 electro-mechanical blocking matrix Any single Input port to any single output port (Up to 4 simultaneous active paths)	GPIB	50 Ohms	DC-6 GHz	1.5:1 maximum

Insertion Loss	Isolation	Input Power	Switching Speed	AC Supply	RF Connectors	Operating Temperature
1 dB maximum DC-2.5 GHz	70 dB minimum DC-4 GHz	1 Watt average	20 milliseconds	85-264 VAC @ 47-63 Hz	SMA female	0° C to +70° C
2 dB maximum 2.5-6 GHz	65 dB minimum 4-6 GHz					

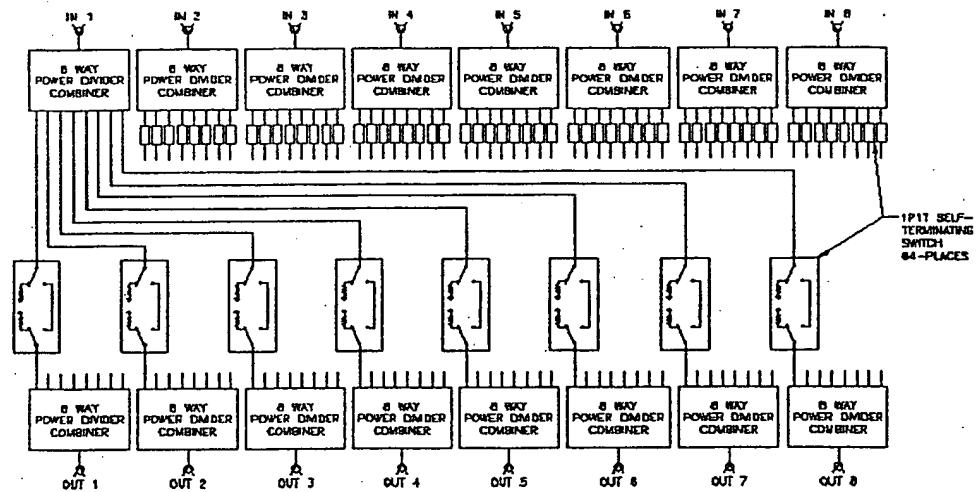
³¹ See <http://www.jwindustries.com/matrix.html#Download> (last visited February 9, 2005).

and the following specifications and illustrations for its RS-232 Matrix Switch:

RS-232 Matrix Switch

Model	Configuration	Control	Impedance	Frequency Range	VSWR	RF Connectors
50MS-104	8 x 8 solid-state non-blocking matrix Any input port to multiple output ports Any output port to multiple input ports (Up to 64 simultaneous active paths)	RS-232	50 Ohms	600-2000 MHz	1.6:1 maximum	SMA Female

Insertion Loss	Isolation (input port to output port)	Isolation (output port to output port)	Input Power	Switching Speed	AC Supply	Operating Temperature
20 dB nominal @ 800 MHz 22 dB nominal @ 2000 MHz	65 dB minimum (path turned off)	40 dB minimum when switched to common input port	+20 dBm average +27 dBm (no damage)	100 microseconds	85-264 VAC @ 47-63 Hz	0° C to +70° C



Other companies, as well, have websites that prominently advertise “matrix switches,” e.g., Hall Research Technologies, Inc.,³² Lantronix, Inc.,³³ Net Optics, Inc.,³⁴ and the website for the Thomas Register announces: “Welcome to the premier industrial Matrix Switches resource. We have a broad range of manufacturers of Matrix Switches and distributors of Matrix Switches which

³² <http://www.hallresearch.com/products/switches/switches.htm> (last visited February 9, 2005).

³³ <http://www.lantronix.com/visualization-solutions/matrix-switches> (last visited February 9, 2005).

³⁴ http://www.netoptics.com/products/product_family.asp?Section=products&cid=3&cmenuitem=3 (last visited February 9, 2005).

can be sourced using this comprehensive vertical portal. You will also find resources for the Matrix Switches industry and related information on Matrix Switches dedicated to helping in research and purchasing.”³⁵

The dictionaries at hand, however, do not define “matrix switch” *per se*, but include various definitions of “matrix.” For example, the IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONIC TERMS 531-32 (3rd ed. 1984), provided by the defendants, defines “matrix” thus:

(1) (color television). (A) (noun). An array of coefficients symbolic of a color coordinate transformation. *Note:* This definition is consistent with mathematical usage. (B) (verb). To perform a color coordinate transformation by computation or by electrical, optical, or other means.

(2) (mathematics). (A) A two-dimensional rectangular array of quantities. Matrices are manipulated in accordance with the rules of matrix algebra. (B) By extension, an array of any number of dimensions.

(3) (electronic computers). A logic network whose configuration is an array of intersections of its input-output leads, with elements connected at some of these intersections. The network usually functions as an encoder or decoder. *Note:* A translating matrix develops several output signals in response to several input signals: a decoder develops a single output signal in response to several input signals (therefore sometimes called an AND matrix); an encoder develops several output signals in response to a signal input signal and a given output signal may be generated by a number of different input signals (therefore sometimes called an OR matrix). *See:* decode; encode; translate.

(4) Loosely, any encoder, decoder, or translator.

(5) (electrochemistry). A form used as a cathode in electroforming. *See:* electroforming. [Boldface in original.]

Other, more recent sources, provide generally the same definitions. For example, the MODERN DICTIONARY OF ELECTRONICS 459 (7th ed. 1999) provides:

1. A coding network or system in a computer. When signals representing a certain code are applied to the inputs, the output signals are in a different code.
2. In electronic computers, any logical network whose configuration is a rectangular array of intersections of its input-output leads, with logic elements con-

³⁵ http://www.thomasregisterdirectory.com/switches/matrix_switches_0025380_1.html (last visited February 9, 2005).

nected at some of these intersections. The network usually functions as an encoder or decoder.

3. A computer network or system in which only one input is excited at a time and produces a combination of outputs.

4. In a color TV circuit, the section that combines the I, Q, and Y signals and transforms them into individual red, green, and blue signals that are applied to the picture-tube grids.

5. A rectangular array of scalar quantities, usually numbers or letters used to represent numbers. Rectangular array means that the elements are arranged into definite rows and columns.

6. An orderly two-dimensional array. An arrangement of circuit elements, such as wires, relays, diodes, etc., that can transform a digital code from one type to another.

7. The terminology applied to the several methods for encoding four channels onto two channels for later recovery back to four channels. Also referred to as 4-2-4. The actual electronics used to encode into two channels or decode back to four are known as matrixing electronics.

8. A rectangular array of elements, in cross-match fashion. Used to describe memory organization, character formation, diode layouts, and so forth.

9. A general process whereby several signals can be added together for recording or transmission on fewer channels, and later retrieved through a complementary process.

10. A mathematical array having height, width, and sometimes depth, into which collections of data may be stored and processed.

The AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS 672 (7th ed. 2000), as well, defines "matrix" in a way virtually identical to the 1984 dictionary cited above, which indicates that the customary meaning of "matrix" has not changed significantly over the years:

(1) (A) (color television) An array of coefficients symbolic of a color coordinate transformation. *Note:* This definition is consistent with mathematical usage. (B) (color television) To perform a color coordinate transformation by computation or by electrical, optical, or other means.

(2) (A) (mathematics) A two-dimensional rectangular array of quantities. Matrices are manipulated in accordance with the rules of matrix algebra. (B) (mathematics) By extension, an array of any number of dimensions.

(3) A logic network whose configuration is an array of intersections of its input-output leads, with elements connected at some of these intersections. The network usually functions as an encoder or decoder. *Note:* A translating matrix develops several output signals in response to several input signals; a decoder develops a single output signal in response to several input signals (therefore sometimes called an AND [sic] matrix); an encoder develops several output signals in response to a single input signal and a given output signal may be generated by a number of different input signals (therefore sometimes by a number of different input signals (therefore sometimes called an OR matrix). *See also:* encode; translate; decode.

(4) (general) Loosely, any encoder, decoder, or translator.

(5) (electrochemistry) A form used as a cathode in electroforming.

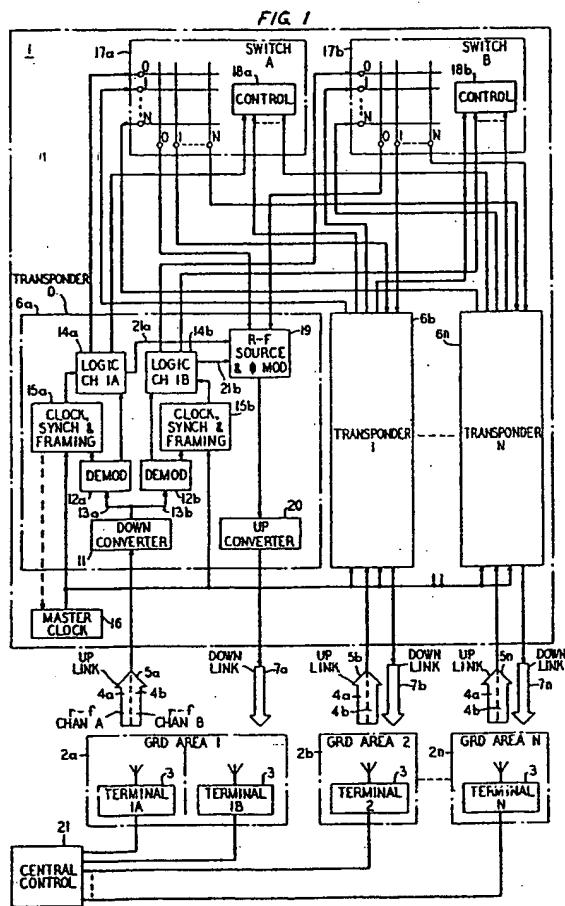
(6) (data management) A two-dimensional array conceptually arranged in rows and columns. *Note:* A matrix with m rows and n columns is said to be of size $m \times n$ (m -by- n). *See also:* row-major order; table; column-major order. [Boldface in original.]

As discussed above, a “switch” is normally understood to mean a device used for opening, closing, or changing the connections in a circuit. The term “matrix switch” thus suggests, based on the foregoing examples of matrices, a switch in which one or more inputs may be connected to one or more outputs. And the current websites advertising “matrix switches” display precisely that, i.e., switches that allow one or more inputs to be connected to one or more outputs.

That general understanding is consistent with various references provided by the plaintiffs that are contemporaneous to the Harvey patents. For example, the plaintiffs cite numerous mid-1980’s sources describing various optical matrix switches that were being developed at the time. For example, one article describes a “new optical switching component for multimode fiber-optic networks ***. This voltage-controlled switch is an 8-port device coupled *** to four input fibers and to four output fibers ***. The matrix switches light from any input to any output, and four simultaneous input-output connections are made. There are 24 such states.” Plaintiffs’ Post-Hearing *Markman* Brief, Exh. E: Soref, 4x4 Electro-Optical Matrix Switch For Fiber Optic Networks, FIBER OPTICS – TECHNOLOGY ’82, SPIE Vol. 326 p.94 (1982) (“the Soref article”). Another reference describes “many optical switch matrices.” *See id.*, Exh. D: Su *et al.*, A Review On Classification Of Optical Switching Systems, IEEE COMMUNICATIONS MAGAZINE, Vol. 24, No. 5 p.50 (May 1986). A

more recent source, GlobalSpec.com, defines a "matrix switch" as "an arrangement with several inputs and several outputs. Any number of inputs can be connected to any number of outputs."³⁶

Defendants have also pointed to U.S. Patent No. 4,105,973, entitled "Multibeam, Digitally Modulated, Time Division, Switched Satellite Communications System,"³⁷ issued on August 8, 1978, that discloses electronic matrix switches of the same sort. In connection with Fig. 1:



³⁶

http://globalspec.com/LearnMore/Industrial_Computers_Boards/CompactPCI_PXI_Products/CompactPCI_PXI_Switches (last visited, May 19, 2004).

³⁷ The defendants also cite Hara, Conceptual Design Of A Switched Television Distribution System Using Optical-Fiber Waveguides, IEEE TRANSACTIONS ON CABLE TELEVISION, Vol. CATV-2, No. 3 (July 1977) ("the Hara article"), see Plaintiffs' *Markman* Brief, Exh. 27: Decl. of Dr. Ciciora at ¶21, but that article does not seem to have been submitted among the plaintiffs' other exhibits. In any case, the special master was unfortunately unable to review that article.

the '973 patent explains that “[l]ogic circuits 14a and 14b broadly function to direct a synchronized baseband input signal to the horizontal level of a first and a second matrix switch 17a and 17b, respectively, corresponding to the number of the associated transponder unit wherein the particular logic circuit resides. For example, logic units 14a and 14b of transponder unit 0, designated 6a in FIG. 1, direct the associated synchronized input signals to horizontal 0 of switches 17a and 17b, respectively; logic circuits 14a and 14b of transponder unit 1, designated 6b, direct the associated synchronized input signals to horizontal 1 of switches 17a and 17b, respectively; etc.” ‘973 patent, col. 4, lines 45-56. The ‘973 patent further assumes, “for a clearer understanding,” “that there are 16 up-link beams 5a to 5n, * * * and 16 down-link channels * * *. The switching arrangement will constitute two 16 X 16 matrix switches, 17a and 17b where two outputs, one from each 16 X 16 switch, are combined at each down-link phase modulator and r-f source 19. Compared to a single 16 X 16 switch-100 megabit/sec network, this configuration is (a) essentially equivalent in traffic carrying capability, (b) provides greater reliability by degrading gracefully rather than failing catastrop[h]ically since there are two paths rather than one connecting each up-link beam to each down-link beam and (c) operates at half the information bit rate. Each of the 16 X 16 matrix switches 17 a and 17b must be capable of connecting each of the associated channels 4a or 4b in each of up-link beams 5a to 5n to each of down-link beams 7a to 7n for proper system operation.” *Id.* at col. 5, lines 23-44. Thus, the term “matrix switch” was being used to connote generally a switch in which one or more inputs may be connected to one or more outputs.

That is the sense in which Harvey *et al.* used the term in their specification. For example, Harvey *et al.* explained that “[m]atrix switch, 39I, is a conventional digital matrix switch, well known in the art of telephone communication switching, that is configured for the small number of inputs and outputs required at controller, 39. Matrix switch, 39I, operates under control of control processor, 39J, and has capacity to receive SPAM signal information from a multiplicity of inputs, including EOFS Valves, 39E and 39F, and from control processor, 39J, and to transfer said information to a multiplicity of outputs, including control processor, 39J; the CPU of microcomputer, 205; buffer/comparator, 8, of signal processor, 200; buffer/comparator, 14, of signal processor, 200; and other outputs.” [Emphasis added.] Harvey IV, col. 89, lines 37-49.

The plaintiffs propose that a "matrix switch" would be generally understood as a "device having multiple inputs and multiple outputs, capable of interconnecting any given input with any given output" generally comports with the foregoing. However, plaintiffs add that matrix switches are "electronically controllable." The references provided by the plaintiffs, particularly, the IEEE COMMUNICATIONS MAGAZINE, noted above, discuss various optical matrix switches, including "a mechanically controlled crosspoints matrix, an electrically controlled crosspoints matrix, and an optically controlled crosspoints matrix." Plaintiffs' Post-Hearing *Markman* Brief, Exh. D: Su *et al.*, A Review On Classification Of Optical Switching Systems, IEEE COMMUNICATIONS MAGAZINE, Vol. 24, No. 5 p.51-2 (May 1986). The "mechanically controlled crosspoint switch" is controlled with "a pulse motor at the center of the disc and a mechanism for up/down motion of the moving fiber to make contact with the fixed fiber array." *Id.* It would not appear that one of ordinary skill in the art would necessarily construe a "matrix switch" as one that was solely "electronically controllable."

The defendants, on the other hand, propose that a "matrix switch" is "a switch having a plurality of vertical paths and a plurality of horizontal paths for interconnecting any one of the vertical paths with any one of the horizontal paths, and not including a multiplexer, which has two or more inputs and a single output." The defendants rely on the Hara article (mentioned above in footnote 37), which, according to Dr. Ciciora, "shows [in Fig. 3] two switching matrices, each having a plurality of vertical paths and a plurality of horizontal paths, and electromagnetically-operated mechanical means for interconnecting any one of the vertical paths with any one of the horizontal paths." *See* Defendants' Opening *Markman* Brief, Exh. 27: Decl. of Dr. Ciciora at ¶21. Dr. Ciciora then turns to the IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONIC TERMS 211 (3rd ed. 1984) definition for "crossbar switch," namely, "a switch having a plurality of vertical paths, a plurality of horizontal paths, and electromagnetically-operated mechanical means for interconnecting any one of the vertical paths with any one of the horizontal paths." *See id.* As noted above in footnote 37, the special master was unable to locate the Hara article among the parties' submissions, but it seems that Dr. Ciciora has described Hara's matrix switch in terms of a "crossbar switch" to support the argument that one of ordinary skill in the art in 1987 would have understood "matrix switch" to mean "crossbar switch." However, as the above references suggest, a "crossbar switch" may be a "matrix switch," but that does not necessarily mean that all "matrix switches" are "crossbar switches." Indeed, Dr. Ciciora stated that "one of skill in the art of television and radio distribution systems at the

time of the alleged invention, i.e., 1987, would probably have understood the term ‘matrix switch’ to mean a ‘crossbar switch,’ having a plurality of vertical paths, a plurality of horizontal paths, and electromagnetically-operated mechanical means for interconnecting any one of the vertical paths with any one of the horizontal paths. By 1987, there were many different switches for performing the cited functions, including but not limited to wire spring relay matrices, electromechanical switches, and electronic reed relay matrices.” [Emphasis added.] *Id.* at ¶20. That is, Dr. Ciciora otherwise suggests that an artisan would not have understood the term “matrix switch” to necessarily mean a “crossbar switch.” In that time frame, it is apparent that a “crossbar switch” was but one type of “matrix switch” available to those of ordinary skill in the art.

Finally, the defendants propose that a “matrix switch” does “not include[e] a multiplexer, which has two or more inputs and a single output.” The plaintiffs, as discussed above, argue that “a multiplexer should be included in the definition of this term because such devices are capable of performing matrix switch functions.” [Plaintiffs’ emphasis.] Plaintiffs’ Opening *Markman* Brief at 23. Turning to those same dictionaries cited above, the IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONIC TERMS 562 (3rd ed. 1984) defines a “multiplexor”³⁸ as “[a]n electronic multiposition switch under the control of a digital computer, generally used in conjunction with an analog-to-digital converter (ADC), that allows for the selection of any one of a number of analog signals (up to the maximum capacity of the multiplexor), as the input to the ADC. A device that allows the interleaving of two or more signals to a single line or terminus.”

Another source, namely, the MODERN DICTIONARY OF ELECTRONICS 491 (7th ed. 1999), provides a lengthier explanation for “multiplexer.”

1. A device for accomplishing simultaneous transmission of two or more signals over a common transmission medium.
2. An analog or linear device for selecting one of a number of inputs and switching its information to the output; the output voltage follows the input voltage with a small error.

³⁸ Excerpts of this resource were provided by the defendants. It is not clear whether that resource also defines “multiplexer,” or whether a “multiplexer” and a “multiplexor” are alternate spellings of the same device when used in the context of a given field, such as computers. In any case, the defendants refer to a “multiplexer.”

3. A digital device that can select one of a number of inputs and pass the logic level of that input-channel. Selection usually is presented to the device in binary weighted form and decoded internally. The device acts as a single-pole multi-position switch that passes digital information in one direction only.
4. A device that will interleave (time division) or simultaneously transmit (frequency division) two or more messages on the same communications channel.
5. A device that uses several communication channels at the same time and transmits and receives messages and controls the communication lines. This device itself may or may not be a stored-program computer.
6. A device that can combine several low-speed inputs into one highspeed output. Multiplexers can also function in reverse, a process called demultiplexing.
7. A decision-making type of digital building block that routes data from its one input to any one of several outputs.
8. The device or technique used to share a resource (usually a memory or a bus).
9. In television, a specialized optical device that makes it possible to use a single television camera in conjunction with one or more motion-picture projectors and/or slide projectors in a film chain. The camera and projectors are in a fixed relationship, and prisms or special (dichroic) mirrors are used to provide smooth and instantaneous nonmechanical transition from one program source to the other.
10. A device for selecting a single signal from one of many sources (similar to a multiposition switch).
11. A hardware device that allows the transmission of a number of different signals simultaneously over a single channel.
12. A combination of hardware and software that allows simultaneous transmission and reception of two or more data streams on a single channel.

Finally, the AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS 716 (7th ed. 2000) defines "multiplexer" as follows:

(1) (A) (supervisory control, data acquisition, and automatic control) A device that allows the interleaving of two or more signals to a single line or terminal. (B) (supervisory control, data acquisition, and automatic control) A device for selecting one of a number of inputs and switching its information to the output.

(2) (A) A device that allows the transmission of a number of different signals simultaneously over a single channel or transmission facility. *Synonym:* multiplexor. (B) A device capable of interleaving the events of two or more activities or of distributing the events of an interleaved sequence to their respective activities. *Contrast:* demultiplexer.

Clearly, a "multiplexer" is a device with a function distinct from that of a "matrix switch." That, itself, is a strong indication that a "multiplexer," although perhaps capable of functioning like a "matrix switch" when so configured, is not a "matrix switch." See GlobalSpec.com³⁹ ("A multiplexer connects one input to several outputs, or several inputs to one output. A matrix switch is * * *."). See also TechWeb.com⁴⁰ (defining "multiplexor" in communications as "a device that merges several low-speed transmissions into one high-speed transmission and vice versa. Contrast with inverse multiplexor."). Indeed, as the defendants point out, Harvey *et al* separately referred to "matrix switches" and "multiplexers," and used those devices to perform different functions. A primary purpose for a "multiplexer" is to combine two or more signals into one (a "demultiplexer" does just the opposite), rather than simply switch signals from input to output. The plaintiffs' arguments that a "multiplexer" may function as a "matrix switch" are thus primarily directed to a determination of equivalency. The task presently before the Court, though, is to simply construe, as a matter of law, the claims, *i.e.*, to determine what meaning a person of ordinary skill in the art would give the term "matrix switch;" thus, the issue of equivalency is not properly considered at this stage. Quite simply, the claims call for a "matrix switch." A "multiplexer" may or may not be configured to function as a "matrix switch," *i.e.*, a "multiplexer" and a "matrix switch" may or may not have overlapping functions, but a "multiplexer" is not a "matrix switch."

To return to the beginning inquiry, *i.e.*, whether the disputed limitation connotes sufficient structure to one of ordinary skill in the art to rebut the presumption of construction under § 112(6), the answer must be yes. Although not a precisely defined term, the foregoing indicates that one of ordinary skill in the art would understand that a "matrix switch" is one in which one or more inputs may be connected to one or more outputs.

³⁹

http://globalspec.com/LearnMore/Industrial_Computers_Boards/CompactPCI_PXI_Products/CompactPCI_PXI_Switches (last visited May 19, 2004).

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The limitation "matrix switch means ***" in claims 7, 9 and 10 should not be construed as a means-plus-function limitation under § 112(6). A "matrix switch" is a switch in which one or more inputs may be connected to one or more outputs. A "multiplexer" is not a "matrix switch."

10. "broadcast transmission means"

The disputed term is found in claim 7, which is reproduced below for reference, with the disputed term in boldface:

7. In a signal processing system,

a receiver/distribution means ***,

a matrix switch means for receiving said programming from said receiver/distributor means and for directing selected portions of said received programming to a **broadcast transmission means**,

a control signal detector means ***

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Broadcast Transmission Means" should be construed under § 112, ¶ 6. The functions performed are to transmit selected portions of the received program. The corresponding structures disclosed in the specification are "a cable field distribution system or equivalent wireless system, known at the time the patent issued, for transmitting information from one location to multiple locations."

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

[T]his term should be interpreted in accordance with 35 U.S.C. § 112, ¶ 6. The function of the broadcast transmission means is to transmit programming over the air. It does not include transmission of programming over hard wire. The '414 patent discloses no structure for performing the function of "directing ... programming to a broadcast transmission means." Therefore, claim 7 is invalid under at least 35 U.S.C. § 112, ¶ 2 for lack of particularity.

Post-Hearing: "[B]roadcast transmission

⁴⁰ <http://www.techweb.com/encyclopedia/defineterm?term=multiplexor> (last visited May 19, 2004). When the definition of "multiplexer" is searched for, this source refers the reader to the definition of "multiplexor."

The term "broadcast transmission" means "transmission of information from one location to multiple locations." "means" should be construed under 35 U.S.C. § 112, ¶6 to refer to an "over-the-air transmission system." However, the specification fails to disclose sufficient corresponding structure.

"[B]roadcast transmission" means "over-the-air transmission."

Plaintiffs' Harvey IV Chart at 32; Defendants' Harvey IV Chart at 42 & 49; Joint Summary at 22-23.

According to the JCCS, the parties agree that § 112(6) applies, but dispute the function and the corresponding structure. JCCS at 6.

The plaintiffs urge that "broadcast transmission" should not be limited to over-the-air transmission, but should also include cable transmission. According to the plaintiffs, the specification does not consistently use the term "broadcast" in a lexicographical sense to mean only over-air transmission. The plaintiffs urge that "the broadcast transmission means is a component of the intermediate transmission station, which takes the programming from the matrix switch that is intended to be sent to the receiver stations, and broadcasts it to the receiver stations via the cable network," and that someone of ordinary skill in the art "would understand that the cable field distribution system would, by its very nature, broadcast the programming to receiver stations over a hard-wired cable network." The plaintiffs contend that the portions of the specification that the defendants rely on "are not applicable for the broadcast transmission means," e.g. "they are directed to other aspects of the exemplary automated intermediate transmission station (such as its receipt of programming) or to the functioning of the receiver stations, not to the cable field distribution structures." [Plaintiffs' emphasis.] Plaintiffs' Opening *Markman* Brief at 25-30.

According to the defendants, on the other hand, the patentees acted as their own lexicographer to expressly define "broadcast" and distinguish "cablecast," namely, "'[t]he stations may transmit programming over-the-air (hereinafter, 'broadcast') or over hard-wire (hereinafter, 'cablecast').'" According to the defendants, the patentees maintained that distinction for all continuations of Harvey III, including Harvey IV. Finally, the defendants contend that Harvey IV fails to disclose an "over-the-air" structure connected to the matrix switch means and that claim 7 is accordingly invalid for lack of written description support. Defendants' Opening *Markman* Brief at 48-49.

b) Discussion

According to the claim, the “matrix switch means” directs “selected portions of said received programming to a broadcast transmission means. As noted above, “the use of the term ‘means’ has come to be so closely associated with ‘means-plus-function’ claiming that it is fair to say that the use of the term ‘means’ (particularly as used in the phrase ‘means for’) generally invokes [§ 112(6)] and that the use of a different formulation generally does not.” *Greenberg*, 91 F.3d at 1584. Thus, a presumption lies in favor of construing this term as a means-plus-function limitation under § 112(6). The focus then turns to whether the claim recites sufficient structure for performing the recited function to avoid the ambit of § 112(6). That, of course, requires at least an initial identification of the recited function. However, the disputed term, recited only once in claim 7, fails to recite a function following the word “means,” i.e., fails to recite a function in typical “means for _____” language. If a “means” term does not recite a function, then that term, according to the Federal Circuit, should not be construed as a means-plus-function limitation under § 112(6). *See York Prods.*, 99 F.3d at 1574; *Wenger Mfg. v. Coating Machinery Systems*, 239 F.3d 1225, 1232 (Fed. Cir. 2001). Nevertheless, the overall context of the claim, viewed in conjunction with the specification, suggests that “broadcast transmission” was intended, perhaps inartfully, as the recited function, i.e., that “broadcast transmission means” was intended as “means for broadcast transmission.” Although courts are not permitted to rewrite claims, the Federal Circuit has held that § 112(6) governs claim elements that do not recite sufficient “structure, material, or acts in support [of the means- or step-plus-function element],” and that a claim element that uses “means” in association with a stated function may be governed by § 112(6) even though the element is not drafted in classic “means for” terms. *See Signtech USA, Ltd. V. Vutek, Inc.*, 174 F.3d 1352, 1356 (Fed. Cir. 1999) (“In this case, the claim element ‘ink delivery means’ uses the term ‘means’ in association with a function, namely ‘ink delivery.’ Although the phrase ‘means for’ is not used, the phrase ‘ink delivery means’ is equivalent to the phrase ‘means for ink delivery,’ because ‘ink delivery’ is purely functional language. Furthermore, the claim does not recite disqualifying structure which would prevent application of § 112, ¶ 6. The magistrate therefore correctly applied § 112, ¶ 6 to the interpretation of this claim element”). Similarly, here although the phrase “means for” is not used, the phrase “broadcast transmission means” is equivalent to the phrase “means for broadcast transmission.” Thus, at this point, at least, the presumption in favor of construing this limitation under § 112(6) remains intact.

The focus thus turns to whether that presumption has been rebutted by recital of sufficient structure to perform the claimed function. The claim does not further describe the "broadcast transmission means." Of the resources at hand, one resource defines a "broadcast" as "[a] mode of information transfer in which a single message is transmitted simultaneously to multiple receivers" (in the context of substations and power engineering), "[a] transmission mode in which a single message is sent to all network destinations, (i.e., one-to-all). Broadcast is a special case of multicast" (in the computer context), and "the transfer of data from one endpoint to all stations" (computer context). AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS 121 (7th ed. 2000). Another resource explains that a "broadcast" is, in the communications context, "[a] television, radio, or data transmission intended for public reception." McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS 287 (6th ed. 2003). Yet another source defines a "broadcast" as "1. Radio or television transmission intended for public reception, for which receiving stations make no receipt. 2. To send messages or communicate simultaneously with many or all points in a circuit." MODERN DICTIONARY OF ELECTRONICS 85 (7th ed. 1999).

Those sources also define the word "transmission" variously as "1. The process of transferring a signal, message, picture, or other form of intelligence from one location to another location by means of wire lines, radio, light beams, infrared beams, or other communication systems. 2. A message, signal, or other form of intelligence that is being transmitted," McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS 2179 (6th ed. 2003), and "1. Conveying electrical energy from point to point along a path. 2. The transfer of a signal, message, or other form of intelligence from one place to another by electrical means. 3. The dispatching of a radio, telegraphy, telephony, facsimile, or other means; the signaling of data over communications channels. 4. A series of characters, messages, or blocks, including control information and user data, sent over a communication channel." MODERN DICTIONARY OF ELECTRONICS 797 (7th ed. 1999). Thus, it appears that the customary meaning of "broadcast transmission," at least, is as the plaintiffs suggest, *i.e.*, transmission of information from one location to multiple locations.

The AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS (7th ed. 2000), at page 121, also defines a "broadcast transmission" in the field of token ring access methods as "[a] transmission addressed to all stations," but that definition does not seem particularly pertinent here.

Altogether, the terms “broadcast transmission” connote more function than structure. Although the term does connote the message or signals being transmitted, which arguably may be considered to be “structure,” that “structure” does not make much sense in the context of claim 7, which calls for the “matrix switch means” to direct “selected portions of said programming to a broadcast transmission means.” Thus, the words “broadcast transmission” do not, in the context of the disputed claim, appear to connote sufficient structure to rebut the presumption that § 112(6) applies to this limitation. Thus, this term should be construed as a means-plus-function limitation. The claimed function, accordingly, is “broadcast transmission.”

According to the foregoing sources, “broadcast transmission” simply means transmission of information from one location to multiple locations. The defendants urge, though, that Harvey *et al.* acted as their own lexicographer and defined “broadcast” to mean over-the-air transmission, as opposed to “cablecast.” As noted above, the defendants rely on Harvey *et al.*’s statement in the “Summary of the Invention:

It is the further purpose of this invention to provide means and methods for the automation of intermediate transmission stations that receive and retransmit programming. The programming may be delivered by any means including over-the-air, hard-wire, and manual means. The stations may transmit programming over-the-air (hereinafter, “broadcast”) or over hard-wire (hereinafter, “cablecast”). They may transmit single channels or multiple channels. The present invention includes capacity for automatically constructing records for each transmitted channel that duplicate the logs that the Federal Communications Commission requires broadcast station operators to maintain. [Emphasis added.]

Harvey IV, col. 8, line 61 to col. 9, line 5. The defendants also note that Harvey *et al.* maintained a distinction between “broadcast” and “cablecast” throughout their specification. Before turning to the specification, though, it is worth noting a definition for “cablecast,” namely, “[a] telecast by cable television,” “[a] telecast transmitted via cable television,” and “a television program broadcast via cable television.” See AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE (4th ed. 2000)⁴¹ (Markman Exh. 56); RIVERSIDE WEBSTER’S II NEW COLLEGE DICTIONARY 153 (1995)(Plaintiffs’ Markman Exh. 57); THE RANDOM HOUSE DICTIONARY OF THE ENGLISH

⁴¹ <http://www.bartleby.com/61/52/C0005200.html>.

LANGUAGE 290 (2d ed. 1987)(Plaintiffs' *Markman* Exh. 58). Overall, Harvey *et al.* described "cablecast" transmission as "conventional." See, e.g., *id.* at col. 48, lines 22-23.

Turning to the specification, according to Harvey *et al.*, Fig. 2:

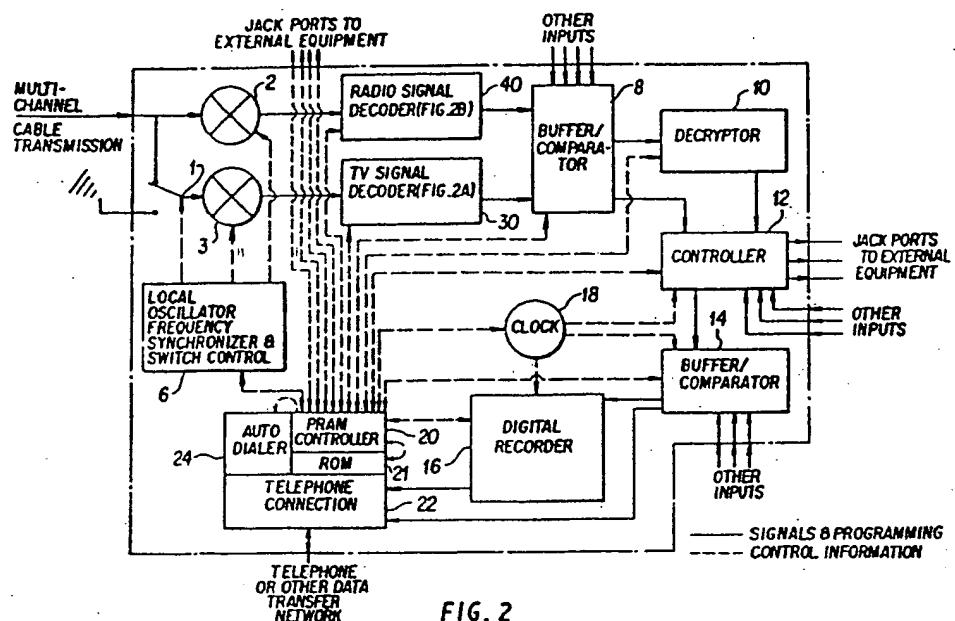


FIG. 2

"shows one embodiment of a signal processor [such as signal processor 71 of FIG. 6A, reproduced below]. Said processor, 26, is configured for simultaneous use with a cablecast input that conveys both television and radio programming and a broadcast television input." *Id.* at col. 18, lines 7-10. Harvey *et al.* further explain:

At switch, 1, and mixers, 2 and 3, signal processor, 26, monitors all frequencies or channels available for reception at the subscriber station of FIG. 2 to identify available programming. The inputted information is the entire range of frequencies or channels transmitted on the cable and the entire range of broadcast television transmissions available to a local television antenna of conventional design. The cable transmission is inputted simultaneously to switch, 1, and mixer, 2. The broadcast transmission is inputted to switch, 1. Switch, 1, and mixers, 2 and 3, are all controlled by local oscillator and switch control, 6. The oscillator, 6, is controlled to provide a number of discrete specified frequencies for the particular radio and television channels required. The switch, 1, acts to select the broadcast input or the cablecast input and passes transmissions to mixer, 3, which, with the controlled oscillator, 6, acts to select a television frequency of interest

that is passed at a fixed frequency to a TV signal decoder, 30. Simultaneously, mixer, 2, and the controlled oscillator, 6, act to select a radio frequency of interest which is inputted to a radio signal decoder, 40. [Emphasis added.]

Id. at lines 11-32. In the embodiment of Fig. 2, at least, Harvey *et al.* maintained a clear distinction between a "cablecast" and a "broadcast" by using a switch to select one or the other.

In the context of describing where SPAM signals are generated,⁴² Harvey *et al.* again distinguished "cablecast" from "broadcast:"

SPAM signals are generated at original transmission stations or intermediate transmission stations and embedded in television or radio or other programming transmissions by conventional generating and embedding means, well known in the art. Said signals may be embedded in transmissions at said stations immediately prior to transmitting said transmissions via conventional broadcast or cablecast means, well known in the art. Alternatively, said signals may be embedded in transmissions that are then recorded, in a fashion well known in the art, on an appropriate conventional video, audio or other record media. Playing back said media on appropriate player apparatus will cause said apparatus to retransmit said transmissions with said SPAM signals embedded precisely as they were embedded when said transmissions were recorded. [Emphasis added.]

Id. at col. 48, lines 16-31.

Harvey *et al.*'s next distinction between a "cablecast" and a "broadcast" is nearly 100 columns later, in "Example #5." According to Harvey *et al.*, "Example #5 focuses on program unit identification signals detected at decoders, 30 and 40, of signal processor, 200." *Id.* at col. 139, lines 52-54. In that example, Harvey *et al.* disclosed cable channels as different from broadcast channels, and provided viewers with the option of watching the same program, "Wall Street Week," on either cable or broadcast channels:

Signal processor, 200, is preprogrammed with information that identifies each cable and over-the-air (hereinafter, "wireless") transmission or frequency in the locality of the subscriber station of FIG. 3 as well as the standard broadcast and cablecast practices that apply on said transmissions and frequencies. Via a conventional multi-channel cable transmission, in a fashion well known in the art, four channels of conventional television programming and two conventional FM radio signals are inputted to a first alternate contact of switch, 1, and to mixer, 2.

⁴² As discussed above in footnote 23, "SPAM" means Signal Processing Apparatus and Method.

Said television channels are transmitted normally assigned to channels 2, 4, 7, and 13 of the television frequency spectrum. Said radio signals are transmitted on 99.0 MHz and 100.0 MHz of the FM frequency spectrum. Via a conventional television receiving antenna, three conventional wireless television transmissions are inputted to the second alternate contact of switch, 1. Said wireless transmissions are on the frequencies of the television spectrum normally assigned to channels 5, 9, and 13. In a predetermined fashion, controller, 20, controls oscillator, 6, to sequence local oscillator, 6, in the pattern: cable channel 2, cable channel 4, cable channel 7, cable channel 13, wireless channel 5, wireless channel 9, wireless channel 13, then to repeat said pattern.

In example #5, the "Wall Street Week" combining synch commands are transmitted unencrypted as in the first example, and the "Wall Street Week" program is transmitted on the frequency of channel 13 by a wireless broadcast station whose transmission is retransmitted on the frequency of channel 13 on said cable. Thus a viewer can tune to the "Wall Street Week" program on either wireless channel 13 or cable channel 13. Simultaneously, different programs are transmitted on each of the other television and radio transmissions. [Emphasis added.]

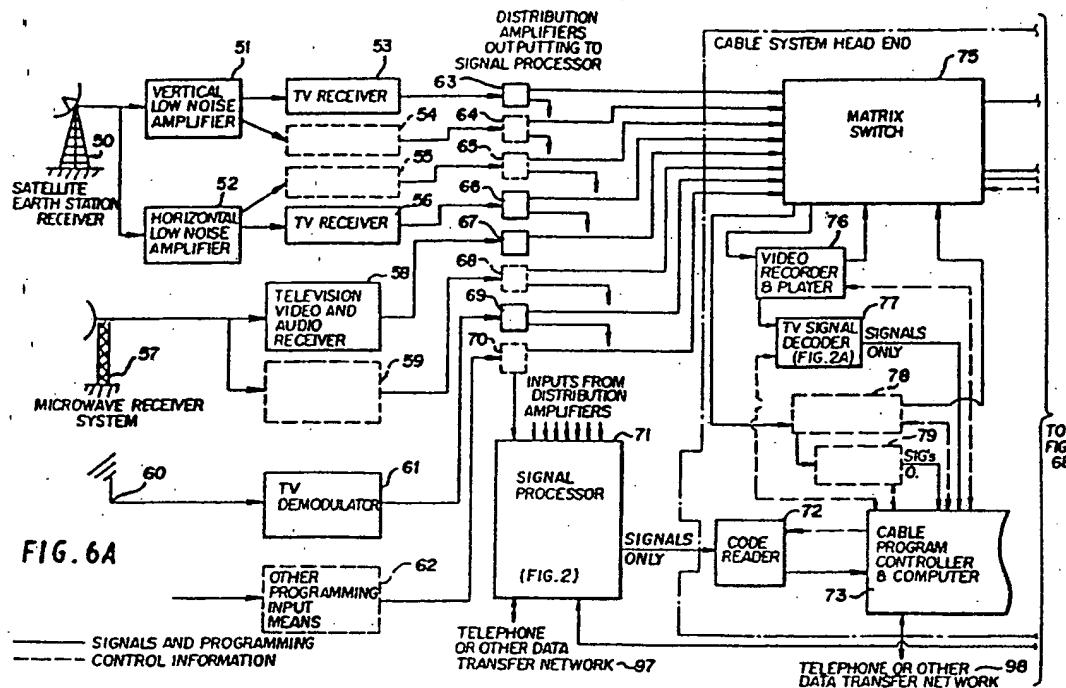
Id. at col. 139, line 55 to col. 140, line 21. It is clear from the foregoing that Harvey *et al.* viewed an over-the-air, or wireless "broadcast" differently than a cable transmission, or "cablecast."

Then, in discussing the automated "intermediate transmission station" of Fig. 6 that "receive[s] and retransmit[s] programming," Harvey *et al.* again distinguished a "broadcast" and a "cablecast," further describing them on different ends of a "scale of operation:"

The stations so automated may transmit any form of electronically transmitted programming, including television, radio, print, data, and combined medium programming and may range in scale of operation from wireless broadcast stations that transmit a single programming transmission to cable systems that cablecast many channels simultaneously. [Emphasis added.]

Id. at col. 181, line 68 to col. 182, line 6.

Also, as discussed above, Fig. 6[A] "illustrates Signal Processing Apparatus and Methods at an intermediate transmission station that is a cable television system 'head end' and that cablecasts several channels of television programming."



According to Harvey *et al.*, "[t]he station receives programming from many sources. Transmissions are received from a satellite ***. Microwave transmissions are received ***. Conventional TV broadcast transmissions are received ***. Other electronic programming transmissions are received ***. Each receiver/modulator/input apparatus, *** outputs said transmissions over various channels to the cable system's field distribution system, 93, which apparatus includes cable channel modulators, 83, 87, and 91, and channel combining and multiplexing system, 92. Programming can also be manually delivered to said station ***." *Id.* at col. 182, lines 7-31. In that embodiment, then, broadcast transmissions are sent to a cable head-end for re-transmission as a cablecast.

The specification further discusses cable channels, cable networks, cable transmissions, and cable systems, in various contexts. Indeed, the Harvey IV specification uses the term "cable" nearly

two times more frequently than the word "broadcast" – all in a way that maintains the distinction between "broadcast" from "cablecast." The foregoing clearly supports the defendants' contention that Harvey *et al.* understood a cable transmission to be different from a wireless transmission, and distinguished the two by using the word "cablecast" with one, and "broadcast" with another, and further suggests that Harvey *et al.* at least implicitly defined those terms separately.

The plaintiffs, however, point to one place in the specification in which, according to the plaintiffs, Harvey *et al.* understood "broadcast" to be not limited to over-the-air transmission, namely, the second paragraph of the "Description Of Preferred Embodiments:"

In the example, the subscriber station of FIG. 1 is in New York City and is tuned to the conventional broadcast television transmission frequency of channel 13 at 8:30 PM on a Friday evening when the broadcast station of said frequency, WNET, commences transmitting a television program about stock market investing, "Wall Street Week." Said WNET station is an intermediate transmission station for said program which actually originates at a remote television studio in Owings Mills, Md. (Hereinafter, a studio or station that originates the broadcast transmission of programming is called the "program originating studio.") From said program originating studio said program is transmitted by conventional television network feed transmission means, well known in the art, to a large number of geographically dispersed intermediate transmission stations that retransmit said program to millions of subscriber stations where subscribers view said program. Said network transmission means may include so-called landlines, microwave transmissions, a satellite transponder, or other means. [Emphasis added.]

Harvey IV, col. 13, lines 29-49. The plaintiffs urge that the "broadcast transmission" may be sent by the "so-called landline," thus indicating that Harvey *et al.* did not use the term "broadcast" to refer only to over-the-air transmission. That, however, is actually not what Harvey *et al.* said. In that example, Harvey *et al.* explained that the station WNET broadcasts the "Wall Street Week" program to the subscriber. The WNET station, is not, however, the "program originating studio," but an "intermediate transmission station." That is, the "program originating studio" broadcast the "Wall Street Week" program to WNET, and WNET, in turn, broadcast that program to the subscriber. Harvey *et al.* then parenthetically explained that the original broadcast transmission of programming is done from the "program originating studio." According to Harvey *et al.*, that programming could be "transmitted by conventional television feed transmission means," namely, "so-called landlines, microwave transmissions, a satellite transponder, or other means." In other words, Harvey *et al.* ex-

plained that in the "Wall Street Week" example, the "program originating studio" broadcast the program to WNET, and that the program could just as well be transmitted to WNET by other "conventional television network feed transmission means," such as a "so-called landline." *See also id.* at col. 161, lines 1-5 ("Said [program originating] studio transmits the information of said program to a plurality of intermediate transmission stations by so-called 'landline' means and/or Earth orbiting satellite transponder means, well known in the art."). Thus, Harvey *et al.* clearly disclosed that a program could be transmitted by broadcast, by "so-called landline," or microwave, *etc.* Harvey *et al.* did not, however, equate or suggest that a "broadcast" was transmission by landline. Contrary to the plaintiffs' suggestion, there is no inconsistency in that paragraph, *i.e.*, Harvey *et al.* still maintained the distinction between a "cablecast" and "broadcast."

Moreover, Harvey *et al.*'s use of "broadcast" and "cablecast" was consistent in their later patents, as well. As discussed below in separate sections of this report and recommendation, Harvey V, VI and VII are all part of a chain of continuations stemming from the application that matured into Harvey III. That is, Harvey IV, V, VI and VII all share the same specification. Harvey V, VI and VII, however, all contain claims that distinguish between "broadcast" and "cablecast." For example, claim 7 of Harvey V calls for:

7. A receiver station system for processing information of a member of a broadcast or cablecast program audience and transferring output to at least one remote data collection station comprising

input means for inputting member information,

first memory means for storing said input information,

detector means for detecting in a broadcast transmission at least one instruction,

processor means operatively connected to said first memory means and said detector means for processing said input information in accordance with said instruction and outputting data that include additional information besides said input information,

second memory means for storing said data, and

transmission means for transmitting said data to said data collection station.
[Emphasis added.]

Claim 4 of Harvey VI, for another example, calls for:

4. A data receiver system comprising:

a switch operatively connected to a first input of a broadcast transmission and a second input of a cablecast transmission for selecting either said first input or said second input and transferring the selected transmission to a digital detector;

a controller operatively connected to said switch for causing said switch to select either said first input or said second input; and

a digital detector operatively connected to said switch for detecting digital data in said selected transmission and for relaying said data to a data processor. [Emphasis added.]

and claim 11 of Harvey VII calls for:

11. A method of generating and delivering an individualized mass medium program presentation at a receiver station, said receiver station having a receiver for receiving a mass medium program signal, a computer for generating and communicating information, and at least one output device operatively connected to said receiver and said computer for delivering to a viewer a mass medium program and computer information, with said computer comprising at least one data storage location, said method comprising the steps of:

storing a timing signal specifying one of a time and a series of times and an identification signal specifying a viewer interest;

first controlling said computer based on a comparison of one of said timing signal and said identification signal to first data, said step of first controlling comprising:

(1) inputting second data to said computer, said second data comprising one of (i) an identification of said mass medium program, (ii) at least one computer programming instructions, and (iii) a timing control signal;

(2) selecting a signal, said selected signal including one of data, information content, and one of a plurality of first control signals respecting said mass medium program; and

(3) storing said selected signal at a storage location;

second controlling said computer based on said first control signal, said step of second controlling comprising:

(1) selecting one of a broadcast and a cablecast signal, said one of a broadcast and a cablecast signal comprising said mass medium program and at least one second control signal;

(2) detecting said plurality of first control signals respecting said mass medium program; and

(3) inputting each of said plurality of detected control signals to a processor;

third controlling said computer based on said timing signal, said step of third controlling comprising:

(1) selecting mass medium program information content;

(2) selecting a location;

(3) communicating said selected mass medium program information content to said selected location; and

presenting to a subscriber at a controlled time said mass medium program with locally generated mass medium program information content, with said mass medium program and said locally generated mass medium program information content being outputted to said subscriber as at least one of the following:

(i) at least one of a combined and a sequential presentation at said at least one output device and

(ii) parallel presentations at a plurality of said at least one output device.
[Emphasis added.]

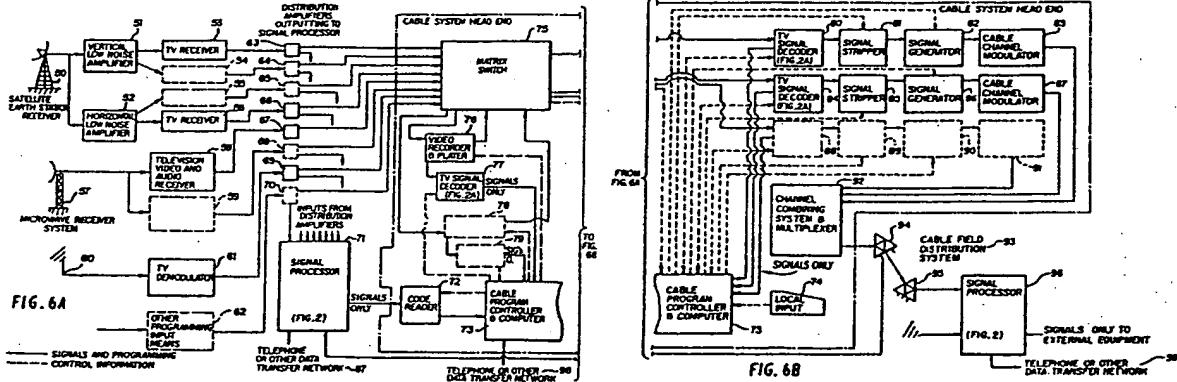
Various terms from those claims are construed below, including terms calling for both "broadcast" and "cablecast." The parties agree that the various claim terms should be construed consistently across the Harvey patents, and this term is no exception. See Joint Summary at 22 n.33. The foregoing is undoubtedly in keeping with the view that Harvey *et al.* used the terms "cablecast" and "broadcast" to mean two different things.

Id. Thus, Harvey *et al.* expressly acted as their own lexicographer in defining "broadcast" to mean over-the-air transmission. As noted above, the Federal Circuit has relied on the prosecution history of parent and related applications for purposes of claim construction and prosecution history estoppel, *see, e.g., Elkay Manufacturing Co.*, 192 F.3d at 980; *Omega Engineering*, 334 F.3d at 1333, and has also applied later prosecution statements to already-issued claims, in appropriate cases. See *Microsoft Corp.*, 357 F.3d at 1350. That is also appropriate here. In this case, Harvey *et al.* explicitly defined "broad-

cast" to mean "over-the-air transmission," and furthermore stated their intention, just as explicitly, that the definition should apply all the way back to the patents currently in issue, namely, Harvey III – VII.

Having identified and defined the claimed function, namely, "broadcast transmission," the next task is to identify the "corresponding structure" disclosed in the specification. Again, claim 7, calls for the "matrix switch means" to direct "selected portions of said programming to a broadcast transmission means." As discussed above, the term "broadcast transmission" means the over-air transmission of something from one point to many. In the context of claim 7, the "broadcast transmission means" is what Harvey *et al.* termed an "intermediate transmission station." That is, the "broadcast transmission means" is clearly not one of the "plurality of program sources" called for in the claim, but is rather a "means" that indirectly receives "programming" from those sources through the "matrix switch means."

The primary example of such an "intermediate transmission station" disclosed in the specification is the "cable system head end" of Figs. 6A and 6B – in particular, the "cable field distribution system 93" shown in Fig. 6B is analogous to the "broadcast transmission means":



The "cable field distribution system," though, is not an "over-the-air" transmission station, and thus cannot constitute a "broadcast transmission means." Indeed, Harvey *et al.* nowhere describe it as such. However, Harvey *et al.* also made clear that using a cable field distribution system as an "intermediate transmission station" was simply one example of such a station. As the discussion of the specification above suggests, Harvey *et al.* understood "broadcast transmission means" to be "well

known in the art" and "conventional." That is, Harvey *et al.* was not devising new "broadcast transmission means." In introducing Fig. 6, Harvey *et al.* explained, immediately under the heading "Automating Intermediate Transmission Stations," that "[t]he signal processing apparatus outlined in FIGS. 2, 2A, 2B, 2C, and 2D, and their variants as appropriate, can be used to automate the operations of intermediate transmission stations that receive and retransmit programming. The stations so automated may transmit any form of electronically transmitted programming, including television, radio, print, data, and combined medium programming and may range in scale of operation from wireless broadcast stations that transmit a single programming transmission to cable systems that cablecast many channels simultaneously." Harvey IV, col. 181, line 64 to col. 182, line 6. Harvey *et al.* then explained that "FIG. 6 illustrates Signal Processing Apparatus and Methods at an intermediate transmission station that is a cable television system 'head end' and that cablecasts several channels of television programming." *Id.* at col. 182, lines 6-10. That is, the "cable system head end" of Figs 6A and 6B could just as well be a "wireless broadcast station." That interpretation is supported by another example in the specification, namely, "example #8," which, according to Harvey *et al.*, "illustrates a remote distribution station transmitting programming and causing apparatus at a plurality of intermediate transmission stations to operate in this fashion." *Id.* at col. 191, lines 32-35.

In example #8, a given remote distribution station that is located in Carteret, N.J., U.S.A. transmits television programming to a plurality of intermediate transmission stations by means of a satellite that is located approximately 20,000 miles above the Earth in so-called "geosynchronous orbit" and transmits programming to the North American continent. Among said intermediate stations are cable system head ends located in California and Florida, broadcast stations located in Texas and Washington, D.C., and the station of FIG. 6 which is, for example, in Vermont. [Emphasis added.]

Id. at col. 191, lines 36-46. Admittedly, it is not clear in the specification how such a "broadcast station" is implemented; nevertheless, given Harvey *et al.*'s reliance on "conventional" and "well-known" transmission means, it seems clear enough that a "broadcast station" is the structure that corresponds to the claimed "broadcast transmission" function, and suggests that an artisan may understand how to implement such a station based on the disclosure of Harvey *et al.*'s invention in the specification.

And that answers the defendants' contention, for the purposes of claim construction only, that there is no written description support for "broadcast transmission means." The defendants urge that the specification does not disclose "a matrix switch means *** for directing selected portions of said received programming to a broadcast transmission means," and is thus invalid. The basis for the defendants' position appears to be that the specification discloses no "corresponding structure" for the "broadcast transmission means." *See* Plaintiffs' Harvey IV Chart at 48-49. Regardless of whether a term is construed under § 112(6), of course, the written description requirement of § 112(1) must be met. Section 112, paragraph 1, requires, among other things, that "[t]he specification shall contain a written description of the invention ***." *See Amgen*, 314 F.3d at 1330 ("Section 112 of the patent statute describes what must be contained in the patent specification. Among other things, it must contain 'a written description of the invention, and of the manner and process of making and using it *** [such] as to enable any person of ordinary skill in the art to which it pertains *** to make and use the same***.' 35 U.S.C. § 112, ¶ 1. *** The purpose of the written description requirement is to prevent an applicant from later asserting that he invented that which he did not; the applicant for a patent is therefore required to 'recount his invention in such detail that his future claims can be determined to be encompassed within his original creation.' *** Satisfaction of this requirement is measured by the understanding of the ordinarily skilled artisan.' *** 'Compliance with the written description requirement is essentially a fact-based inquiry' that will 'necessarily vary depending on the nature of the invention claimed.'"). There seems to be no dispute that the specification discloses in detail only a cable head-end system in that context, i.e., intermediate transmission station, rather than a "broadcast transmission means." Use of a cable head-end as an intermediate transmission station, though, is simply a disclosed embodiment, as discussed above. Indeed, Harvey *et al.* explained that Figs. 6A and 6B are "a block diagram of one example of signal processing apparatus and methods at an intermediate transmission station, in this case a cable system headend." Harvey IV, col. 12, lines 12-15. As discussed above, the "intermediate transmission station" could be a broadcast station, rather than a cable head-end. Overall, though, the defendants have not submitted much more than conclusory statements as to whether the disputed term finds § 112(1) support in the specification. Whether the written description requirement has been met is treated as a question of fact, and particularly requires explication of the understanding of one of ordinary skill in the art. *See Hyatt v. Boone*, 146 F.3d 1348, 1352 (Fed. Cir.

1998). That is lacking, *i.e.*, the defendants' experts, Drs. Ciciora and Rhyne, do not appear to have addressed the issue of lack of § 112(1) support, much less provided reasons why this limitation lacks support in the specification. Nor was that issue addressed during the *Markman* hearing. The present record is inadequate to show lack of written description support, and the defendants' contention in that regard must therefore be rejected. However, that conclusion is reached solely in connection with the issue of claim construction and on the current record. The defendants remain free to raise this issue at trial or in dispositive motions.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The "broadcast transmission means" in claim 7 should be construed as a means-plus-function limitation under § 112(6). The recited function is "broadcast transmission." A "broadcast transmission" is a wireless or over-the-air transmission from one location to many locations. The structure "corresponding" to that function is a broadcast station that was conventional during the relevant time frame.

Under the terms of § 112(6), those limitations should therefore be construed to cover that corresponding structure and equivalents thereof.

11. "control signal detector means"

The disputed term appears in asserted claims 7, 9 and 10. Claim 7 is deemed representative, and is reproduced below for reference, with the disputed term in boldface:

7. In a signal processing system,

a receiver/distribution means * * *,

a matrix switch means * * *,

a **control signal detector means** for detecting control signals respecting said programming and transferring said control signals to storage/transfer means, said **control signal detector means** being configured to detect said control signals in a predetermined frequency range or at a predetermined location within said programming,

a storage/transfer means * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Control Signal Detector Means" should not be construed under § 112 ¶ 6, but should be construed to mean "a detector, as that term is generally understood by persons of ordinary skill in this art." The additional modifier "control signal," to paraphrase the Federal Circuit's analysis, merely places an additional functional constraint (detection of control signals) on a structure (detector) otherwise adequately defined.

[If] § 112(6) applies, the recited function of "control signal detector means" in Claim 7 is "for detecting control signals respecting said programming and transferring said control signals to storage/transfer means." The corresponding structure disclosed in the specification is a digital detector (e.g., see digital detectors 34, 37, 38, 43 and 46 of Figures 2A-2C of the '825 and '490 patents) and equivalents known at the time the patent issued.

Post-Hearing: 35 U.S.C. § 112(6) does not apply to "control signal detector means." The term should be construed to mean "a detector, as that term is generally understood by persons of ordinary skill in the art."

If 35 U.S.C. § 112(6) applies, then the functional recitation is "for detecting control signals respecting said programming and transferring said control signals to storage/transfer means." The corresponding structures include the same as those recited for "detector means" in claim 7 above, namely "a digital detector (e.g., see digital detectors 34, 37, 38, 43 and 46 of Figures 2A-2C of the '825 and '490 patents), as well as equivalents known at the time the patent issued."

DEFENDANTS' PROPOSED CONSTR.

"Control signal detector means" [should be] construed under 35 U.S.C. § 112, ¶ 6. The function of the control signal detector means is "detecting control signals respecting said programming and transferring said control signals to a storage/transfer means, said control signal detector means being configured to detect said control signals in a predetermined frequency range or at a predetermined location within said programming." [The corresponding structure is] "at least two sets of the following TV signal decoder structure as shown in Figs. 2D and 2A: filter 31; amplitude demodulator 32 receiving output from filter 31; line receiver 33 receiving output from the amplitude demodulator 32; digital detector 34 receiving output from line receiver 33; audio demodulator 35 receiving output from the amplitude demodulator 32; high pass filter 36 receiving output from the audio demodulator 35; digital detector 37 receiving output from the high pass filter 36; controller 39 connected to and receiving output from digital detectors 34 and 37 and connected to and outputting control information to filter 31, amplitude demodulator 32, line receiver 33, digital detectors 34 and 37, audio demodulator 32 and high pass filter 36; and an electrical conductor connecting the output of controller 39 to an input of the 'storage/transfer means,' and equivalents thereof."

[If] § 112, ¶ 6 does not apply, "control signal detector means" should be construed to mean a "control signal detector" as that term would have been generally understood by persons of ordinary skill in the art at the time of the alleged invention in 1987. In 1987, one of ordinary skill in the art would have understood the term "control signal detector" as "a device for determining the presence of a signal embedded within programming that allows one to regulate." As re-

quired by the remainder of this claim limitation, the embedded signal must be either at a particular audio frequency of the audio portion of a television transmission or at a line or lines or portion of a line in the vertical interval of a television video transmission.

Post-Hearing: S-A submits that the "control signal detector means" should be construed under 35 U.S.C. § 112, ¶6 to require "at least two sets of the following TV signal decoder structure as shown in Figs. 2D and 2A: filter 31; amplitude demodulator 32; line receiver 33; digital detector 34, 37, and 38; audio demodulator 35; high pass filter 36; controller 39; and an electrical conductor connecting the output of controller 39 to an input of the 'storage/transfer means,' and equivalents thereof." However, the specification fails to disclose sufficient corresponding structure to perform all the recited functions.

If 35 U.S.C. § 112, ¶6 does not apply, then "control signal detector means" should be construed to mean a "control signal detector" as that term would have been generally understood by persons of ordinary skill in the art at the time of the alleged invention in 1987. In 1987, one of ordinary skill in the art would have understood "control signal detector" as a device for determining the presence of a signal embedded within programming that allows one to regulate." As required by the remainder of this claim limitation, the embedded signal must be either at a particular audio frequency of the audio portion of a television transmission or at a line or lines or portion of a line in the vertical interval of a television video transmission. *See WEBSTER'S NINTH NEW COLLEGiate DICTIONARY* (1984), definitions of "detector" and "control" and *Personalized Media Communications v. Int'l Trade Comm'n*, 161 F.3d 696, 707 (Fed. Cir. 1998), for interpretation of "at a predetermined frequency range or at a predetermined location."

Plaintiffs' Harvey IV Chart at 32-33; Defendants' Harvey IV Chart at 49-51; Joint Summary at 24-25.

The parties urge that the construction of "control signal detector means" should apply to that term as it appears in claims 9 and 10.

According to the JCCS, the parties dispute whether § 112(6) applies, but if it does, then the parties dispute the function, as well as the corresponding structure. If § 112(6) does not apply, then the parties dispute the proper definition of the term. JCCS at 6.

The defendants urge that the disputed term should be construed as a means plus function limitation. According to the defendants, the function of "transferring said control signals to storage/transfer means" requires corresponding structure beyond "digital detector." Defendants' Opening *Markman* Brief at 50-51.

The plaintiffs contend that the defendants "fail to acknowledge, for obvious reasons, the Federal Circuit's construction of 'detector' as falling outside of Section 112, par. 6." According to the plaintiffs, the defendants "include within their identification of corresponding structure the filters, demodulators and line receivers that condition the incoming signal before it is fed into the digital detector," but do not "explain how these additional structures 'detect' control signals." Plaintiffs' Reply Brief at 17.

b) Discussion

As discussed above, the term "detector means" connotes sufficient structure to avoid construction as a means-plus-function term under § 112(6). Here, the same conclusion must be drawn for the term "control signal detector means."

The descriptive words "control signal" do not weigh against that conclusion. As the Federal Circuit in *Personalized Media* explained in construing the term "digital detector," "an adjectival qualification ('digital') placed upon otherwise sufficiently definite structure ('detector') does not make the sufficiency of that structure any less sufficient for purposes of § 112, ¶6. Instead, it further narrows the scope of those structures covered by the claim and makes the term more definite. The use of the word 'digital' in conjunction with the word 'detector' merely places an additional functional con-

straint (extraction of digital information) on a structure (detector) otherwise adequately defined." *Id.*, 161 F.3d at 705. The same applies here. As discussed above, the word "detector" was construed to mean a device that was a device for determining the presence of a signal. The words "control signal" place an additional functional constraint on "detector," i.e., a "control signal detector" is a device that is capable of detecting control signals.

Finally, the defendants urge that if "control signal detector means" is construed under § 112(6), the specification "fails to disclose sufficient corresponding structure to perform all the recited functions." The disputed term was not construed under § 112(6), and thus that argument is moot.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The limitation "control signal detector means ***" in claims 7, 9 and 10 should not be construed as a means plus function limitation under § 112(6). A "control signal detector" means a device for determining the presence of a control signal.

12. "storage/transfer means"

The disputed term appears in asserted claims 7, 9 and 10. Claim 7 is deemed representative, and is reproduced below for reference, with the disputed term in boldface:

7. In a signal processing system,

a receiver/distribution means ***,

a matrix switch means ***,

a control signal detector means ***,

a storage/transfer means for receiving and storing said control signals and for transferring at least a portion of said control signals for further processing, and

a processor means ***.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Storage/Transfer Means" invokes § 112, ¶6. The functions performed are "receiving and storing said control signals and for transferring at least a portion of said control signals for further processing." The corresponding structures disclosed in the specification are "a RAM or a PRAM, and equivalents thereof that were known when the patent issued."

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

[T]his term should be interpreted under 35 U.S.C. § 112, ¶ 6, and [] the functional recitation is "for receiving and storing said control signals and for transferring at least a portion of said control signals for further processing. [The corresponding structure is] "buffer/comparator 8, buffer/comparator 14, and digital recorder 16, inputs of which are connected to outputs of the 'control signal detector means,' and electrical conductors that link the preceding apparatus to devices that perform further processing, and equivalents thereof."

Post-Hearing: "[S]torage/transfer means" should be construed under 35 U.S.C. § 112, ¶6 to require "buffer/comparator 8, buffer/comparator 14, and digital recorder 16, inputs of which are connected to outputs of the 'control signal detector means,' and electrical conductors that link the preceding apparatus to devices that perform further processing, and equivalents thereof."

Plaintiffs' Harvey IV Chart at 34; Defendants' Harvey IV Chart at 56; Joint Summary at 25.

The parties urge that the construction of "storage/transfer means" should apply to that term as it appears in claims 9 and 10.

According to the JCCS, the parties agree that § 112(6) applies, and that the function is "for receiving and storing said control signals and for transferring at least a portion of said control signals for further processing." However, the parties dispute the interpretation of that function, as well as the corresponding structure. JCCS at 6.

The defendants emphasize three aspects of the recited function, namely, (1) receiving the control signals, (2) storing the control signals, and (3) transferring at least some portion of those control signals for further processing. The defendants then identify the buffer/comparator 8,

buffer/comparator 14, and digital recorder 16, as well as their respective signal output conductors, as the corresponding structure. Defendants' Opening *Markman* Brief at 51-52.

The plaintiffs do not address this term in their *Markman* briefs.

b) Discussion

As discussed above, the term "storage means" was deemed to connote sufficient structure to avoid construction under § 112(6). The present term, however, calls for a "storage/transfer means." Although the term "storage" defines structure, the term "transfer," a purely functional term, does not convey any sense of structure. *See, e.g.*, MODERN DICTIONARY OF ELECTRONICS 792 (7th ed. 1999)(defining "transfer" as, *inter alia*, "to transmit, or copy, information from one device to another."). Moreover, the term "transfer" does not appear in the limitation as an adjective of the word "storage," nor does it otherwise appear to be a word that, in conjunction with "storage," connotes a particular type of "storage." Thus, the words "storage/transfer means," when taken together, do not appear to connote sufficient structure to avoid construction under § 112(6) as a means plus function limitation.

The first task, therefore, is to identify the claimed function. *See Altiris*, 318 F.3d at 1375. The claim recites two functions, namely, "receiving and storing said control signals" and "transferring at least a portion of said control signals for further processing." The defendants identify three functions by viewing the "receiving and storing" function as two functions. However, as discussed below, in the end it appears to make no difference with regard to claim construction how that phrase is construed.

The next task is to identify the "corresponding structure" disclosed in the specification that is clearly linked to those functions. *See id.* The defendants point to the buffer/comparators 8 and 14, and digital recorder 16, including the electrical conductors, as depicted in Fig. 2.⁴³

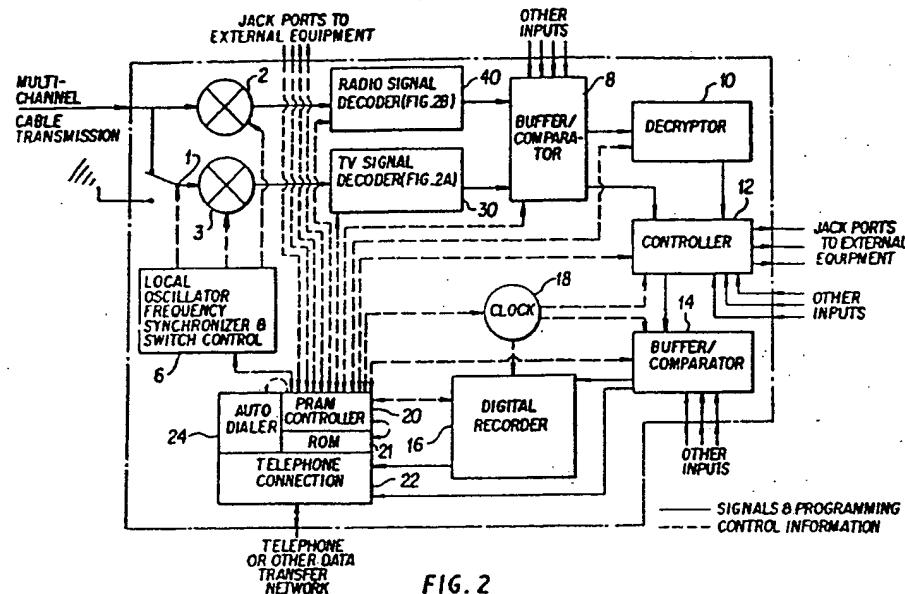
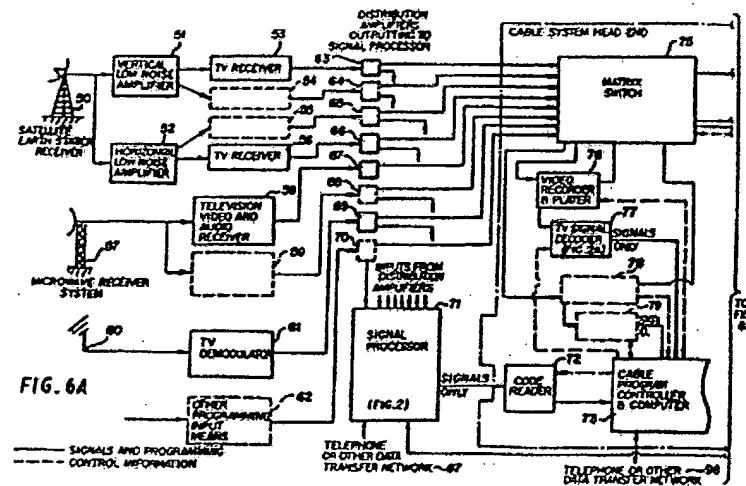


FIG. 2

Fig. 2 illustrates the components of Harvey *et al.*'s signal processor. *See Harvey IV, col. 18, line 7.* According to Harvey *et al.*, the signal processor "is configured for simultaneous use with a cablecast

⁴³ To put Fig. 2 in context, Fig. 2 provides further detail of the signal processor 71 of Fig. 6A, to which the parties had turned in identifying the "corresponding structure" for the "receiver/distribution means" (discussed above):



input that conveys both television and radio programming and a broadcast television input." *Id.* at col. 18, lines 8-10.

Again, the recited function is concerned with the processing of "control signals." Returning briefly to the context of, for example, claim 7 (claims 9 and 10 are similar), "control signals" are first mentioned as detected by the "control signal detector means," and then transferred to the "storage/transfer means." That is, claim 7 calls for:

7. In a signal processing system,

a receiver/distribution means * * *,

a matrix switch means * * *,

a control signal detector means for detecting control signals respecting said programming and transferring said control signals to storage/transfer means, said control signal detector means being configured to detect said control signals in a predetermined frequency range or at a predetermined location within said programming,

a storage/transfer means for receiving and storing said control signals and for transferring at least a portion of said control signals for further processing, and

a processor means for controlling the directing functions of said matrix switch means and the transfer functions of said storage/transfer means. [Emphasis added.]

According to the claim language, then, the "storage/transfer means" operates under the control of the "processor means."

In the context of Fig. 2, Harvey *et al.* explain that "[d]ecoder, 30, * * * and decoder, 40, * * * detect signal information embedded in the respective inputted television and radio frequencies, render said information into digital signals that subscriber station apparatus can process, modify particular ones of said signals through the addition and/or deletion of particular information, and output said signals and said modified signals to buffer/comparator, 8." *Id.* at lines 39-44. That is, the decoders 30 and 40 correspond to the claimed "control signal detector means" and the "signal information" corresponds to the claimed "control signals." The "buffer/comparator 8" receives

those "control signals" from the decoders 30 and 40, thus satisfying the "receiving" part of the recited function. Harvey *et al.* further explain:

Buffer/comparator, 8, receives said signals from said decoders and other signals from other inputs and organizes the received information in a predetermined fashion. Buffer/comparator, 8, has capacity for comparing a particular portions or portions of inputted information to particular preprogrammed information and for operating in preprogrammed fashions on the basis of the results of said comparing. It has capacity for detecting particular end of file signals in inputted information and for operating in preprogrammed fashions whenever said information is detected.

The process of communication metering commences at buffer/comparator, 8. In a predetermined fashion, buffer/comparator, 8, determines whether a given instance of received signal information requires decryption, either in whole or in part. In a fashion described more fully below, buffer/comparator, 8, and a controller, 20, which, too, is described more fully below, determine whether signal processor, 26, is enabled to decrypt said information. [Emphasis added.]

Id. at lines 46-65. Although Harvey *et al.* expressly state that the buffer/comparator 8 "receives" the control signals, they do not expressly state that it "stores" those signals. Nevertheless, it seems reasonably clear that the functional description of the buffer/comparator 8 with respect to the control signals, namely, organizing, comparing, detecting, operating and determining, requires holding at least the control signals for long enough to accomplish those activities – thus satisfying the "storing" part of the claimed function. Indeed, the "buffer/comparator" is, at least in part, a "buffer," which is commonly understood to refer to a storage device, albeit providing for transient "storage." See, e.g., MODERN DICTIONARY OF ELECTRONICS 86-87 (7th ed. 1999) ("4. A storage device used to compensate for a difference in the rate of flow of information * * *"). Furthermore, the specification reasonably discloses that a PRAM, or programmable random access memory, provides the buffer-type storage, in light of the fact that the "buffer/comparator" is, as discussed below, under the control of the "PRAM controller" 20 (depicted in Fig. 2).

As for the "transferring" part of the claimed function, Harvey *et al.* explain, in the sentences following the above excerpt, that if the signal processor is enabled to decrypt control signal information, the "buffer/comparator, 8, transfers said information to decryptor, 10. If signal processor, 26, is not so enabled, buffer/comparator, 8, discards said information in a predetermined fashion.

Buffer/comparator, 8, transfers signals that do not require decryption directly to processor or controller, 12." *Id.* at line 66 to col. 19, line 3. That is, as described, the buffer/comparator 8 transfers control signals to the decryptor 10 if necessary for further processing. Thus, the buffer/comparator 8 performs the claimed functions of "receiving and storing said control signals" and "transferring at least a portion of said control signals for further processing." Additionally, Fig. 2 shows the buffer/comparator 8 as controlled by the PRAM controller 20, which corresponds to the claimed "processor means." *See id.* at col. 20, lines 23-38 ("Signal processor, 26, has a controller device which includes programmable RAM controller, 20; * * * * A particular portion of ROM, 21, is erasable programmable ROM (hereinafter, 'EPROM') or other forms of programmable nonvolatile memory. * * * * Controller, 20, has capacity for controlling the operation of all elements of the signal processor and can receive operating information from said elements.")

The defendants also, however, point to buffer/comparator 14, digital recorder 16 and "electrical conductors that link the preceding apparatus to devices that perform further processing" as part of the "corresponding structure." Buffer/comparator 14, although apparently functioning in the same way as buffer/comparator 8, does not receive control signals from the decoders 30 and 40, i.e., "control signal detector means," as required by the claims. Rather, it receives the control signals from controller 12, as depicted in Fig. 2. *See id.* at col. 19, lines 41-43 ("Buffer/comparator, 14, receives signal information that is meter information and/or monitor information from controller, 12, and from other inputs * * *"). The same may be said for digital recorder 16, i.e., it does not receive the control signals from the decoders 30 and 40, nor does it appear to perform the "transfer" part of the claimed functions. *See id.* at col. 20, lines 15-18 ("Digital recorder, 16, is a memory storage element of standard design that receives information from buffer/comparator, 14, and records said information in a predetermined fashion."). Finally, the proposed "electrical conductors," although perhaps signified by lines in the various figures, are nowhere described in the specification, nor have the defendants explained how "electrical conductors" perform the recited functions. Nothing in the specification "clearly links" the asserted "electrical conductors" to the claimed functions. *See Medtronic*, 248 F.3d at 1311 ("Structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." (quoting *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed. Cir. 1997)). As noted previously, structure that merely enables other structure to perform its function is not nec-

essarily "corresponding structure." See *Med. Instrumentation & Diagnostic Corp. v. Elekta, AB*, 344 F.3d 1200, 1211-12 (Fed. Cir. 2003). Accordingly, buffer/comparator 14, digital recorder 16 and "electrical conductors" must be rejected as "corresponding structure."

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The "storage/transfer means" called for in claims 7, 9 and 10 should be construed as a means-plus-function limitation under § 112(6). The recited functions in each of those claims is "receiving and storing said control signals" and "transferring at least a portion of said control signals for further processing." The structure "corresponding" to those functions is buffer/comparator 8, including PRAM.

Under the terms of § 112(6), those limitations should therefore be construed to cover that corresponding structure and equivalents thereof.

13. "processor means"

This limitation appears in asserted claims 7, 9 and 10. Claim 7 is again deemed representative (the disputed term is in boldface):

7. In a signal processing system,
 - a receiver/distribution means * * *,
 - a matrix switch means * * *,
 - a control signal detector means * * *,
 - a storage/transfer means * * *, and
 - a **processor means** for controlling the directing functions of said matrix switch means and the transfer functions of said storage/transfer means.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

DEFENDANTS' PROPOSED CONSTR.

[If] § 112(6) applies, the recited function of If § 112, ¶6 applies, the parties agree that the re-

"processor means" in Claim 7 is for "controlling the directing functions of said matrix switch means and the transfer functions of said storage transfer means." This is the same as for Claim 1 above, except that Claim 7 does not include the term "output" in "output directing function" from Claim 1, and Claim 7 adds "and the transfer functions of said storage transfer means." The structure corresponding to the function of "processor means" in Claim 7 is the same as that for "processor means" in Claim 1 above.

[If § 112(6) does not apply, then same as in claim 1 above]

Post-Hearing: 35 U.S.C. § 112(6) does not apply to "processor means." The term "processor means" should be construed to mean "a digital electronic device that processes information by operating on data according to instructions."

However, if § 112(6) applies, the functional recitation is "for controlling the directing functions of said matrix switch means and the transfer functions of said storage/transfer means." The corresponding structures include a processor or computer, as well as equivalents known at the time the patent issued. (*See e.g.* [Harvey III], signals processor 200 of Figure 4, signal processor 200 and microcomputer 205 of Figure 5, signal processor 71 and computer 73 of Figure 6A, microcomputer 205 and signal processor 200 of Figure 7; and [Harvey I], signal processor 71 of Figure 3A, computer 73 of Figure 3B, and microcomputer 205 of Figure 6G.)

cited function is "for controlling the directing functions of said matrix switch means and the transfer functions of said storage/transfer means." "PRAM controller 20, the outputs of which are connected to buffer/comparator 8, controller 12, and buffer/comparator 14; ROM 21 configured to direct PRAM controller 20 to control the transfer functions of the 'storage/transfer means;' and cable program controller and computer 73 configured to control the switching functions of the 'matrix switch means,' the outputs of which are connected to control inputs of the 'matrix switch means,' and equivalents thereof." However, the specification only discloses general purpose computer hardware for performing the required functions. There is no disclosure of software or specific algorithms for carrying out the recited functions. * * * * Consequently, there is insufficient written description for the processor means to perform the recited functions, and claim 7 is invalid under 35 U.S.C. § 112, ¶1.

If § 112, ¶6 does not apply, the parties agree that this term should be defined as "a digital electronic device that processes information by operating on data according to instructions."

Post-Hearing: "[P]rocessor means" should be construed under 35 U.S.C. § 112, ¶6 to mean "PRAM controller 20, the outputs of which are connected to buffer/comparator 8, controller 12, and buffer/comparator 14; ROM 21 configured to direct PRAM controller 20 to control the transfer functions of the 'storage/transfer means;' and cable program controller and computer 73 configured to control the switching functions of the 'matrix switch means,' the outputs of which are connected to control inputs of the 'matrix switch means,' and equivalents thereof."

The "processor means" of claims 9 and 10 is required to perform its function "in response to said control signals or on local command." This

additional language requires some additional corresponding structure to permit the appropriate transfer of command signals. However, the specification fails to disclose sufficient corresponding structure.

If § 112, ¶6 does not apply, then "processor means" should be construed as that term would have been generally understood by persons of ordinary skill in the art at the time of the alleged invention in 1987. In 1987, one of ordinary skill in the art would have understood the term "processor means" as a digital electronic device that processes information by operating on data according to instructions. See *Webster's Ninth New Collegiate Dictionary* (1984) p.938 (definition of "processor"). Nevertheless, claims 1 and 2 are still invalid under § 112, ¶1, since there is no written description of the software required to program the computer to perform the recited functions.

Plaintiffs' Harvey IV Chart at 37; Defendants' Harvey IV Chart at 57-59; Joint Summary at 26-27.

The parties urge that the construction of "processor means" should apply to that term as it appears in claim 10.

According to the JCCS, the parties dispute whether § 112(6) applies, but agree that if it does, then the function is "for controlling the directing functions of said matrix switch means and the transfer of functions of said storage/transfer means." However, the parties would then dispute the interpretation of that function, as well as the corresponding structure. If § 112(6) does not apply, then the parties agree that "processor" means "a digital electronic device that processes information by operating on data according to instructions. JCCS at 6.

Defendants urge that "processor means" should be construed under § 112(6), and that the specification's failure to provide sufficient detail regarding the software or algorithm of control being claimed renders the claim invalid. Defendants' Opening *Markman* Brief at 53.

b) Discussion

This limitation uses the word "means," and thus presumptively should be construed under § 112(6) as a means-plus-function limitation. However, as discussed above in connection with the terms "first processor means" and "second processor means," the term "processor" connotes sufficient structure to avoid construction under § 112(6). Furthermore, the term "processor" was construed to mean a digital electronic device that processes information by operating on data according to instructions. Also, the defendants' invalidity argument was addressed above in connection with construction of the term "first processor means."

c) Recommended Construction

Accordingly, in view of the foregoing, the special master recommends that the Court conclude that:

The limitation "processor means ***" should not be construed as a means-plus-function limitation under § 112(6). A "processor" is a digital electronic device that processes information by operating on data according to instructions.

14. "multichannel television distribution means"

This limitation appears in claims 9 and 10. Claim 9 is reproduced below for reference, with the disputed term in boldface:

9. In a multichannel television distribution system,

a receiver/distributor means ***, a matrix switch means for receiving said programming from said receiver/distribution means and for directing selected portions of said received programming to a recording device operatively connected to a **multichannel television distribution means**,

a control signal detector means ***,

a storage/transfer means ***, and

a processor means ***

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[same as "broadcast transmission means," above]

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

[T]his term should be interpreted under 35 U.S.C. § 112, ¶ 6. The function of the "multichannel television distribution means" is distributing television programming over multiple channels. "Multichannel television distribution," as a modifier of "means," is purely functional and specifies the function of the claimed means, i.e., to distribute television programming over multiple channels, without reciting any supporting structure. The only structure disclosed in the '414 specification that possibly corresponds to the "multichannel television distribution means" is field distribution system 93, including the cable channel modulators 83, 87, and 91, channel combining and multiplexing system 92, amplifiers 94 and 95[,] and signal processor 96.

Post-Hearing: [no change]

Plaintiffs' Harvey IV Chart at 43, and Defendants' Harvey IV Chart at 65-66; Joint Summary at 27.

The parties urge that the construction of "multichannel television distribution means" should apply to that term as it appears in claim 10.

According to the JCCS, the parties agree that § 112(6) applies, but dispute the function, as well as the corresponding structure. JCCS at 8.

The defendants urge that their construction is "fully supported by intrinsic record." Defendants' Opening *Markman* Brief at 54.

b) Discussion

This term uses the word "means," and thus presumptively should be construed under § 112(6). As with the term "broadcast transmission means" in claim 7 (construed above), though, the claims do not expressly recite a function following the word "means" in typical "means for ____" language. Nevertheless, "multichannel television distribution" states the recited function, and the disputed term is equivalent to "means for multichannel television distribution" for the reasons

discussed above. By using the word "means," and providing words indicating a function, the presumption in favor of construction under § 112(6) remains intact. *See Greenberg*, 91 F.3d at 1584 ("[T]he use of the term 'means' has come to be so closely associated with 'means-plus-function' claiming that it is fair to say that the use of the term 'means' (particularly as used in the phrase 'means for') generally invokes [§ 112(6)] and that the use of a different formulation generally does not.").

The focus thus turns to whether that presumption is rebutted by the recital of structure in the claim for performing that "function." Although the claim requires a "recording device" to be "operatively connected" to the "multichannel television distribution means," there is no structure recited in the claim for performing the claimed function. The preambles of claims 9 and 10 do, however, call for "a multichannel television distribution system."

9. In a multichannel television distribution system: * * *

10. In a multichannel television distribution system: * * *

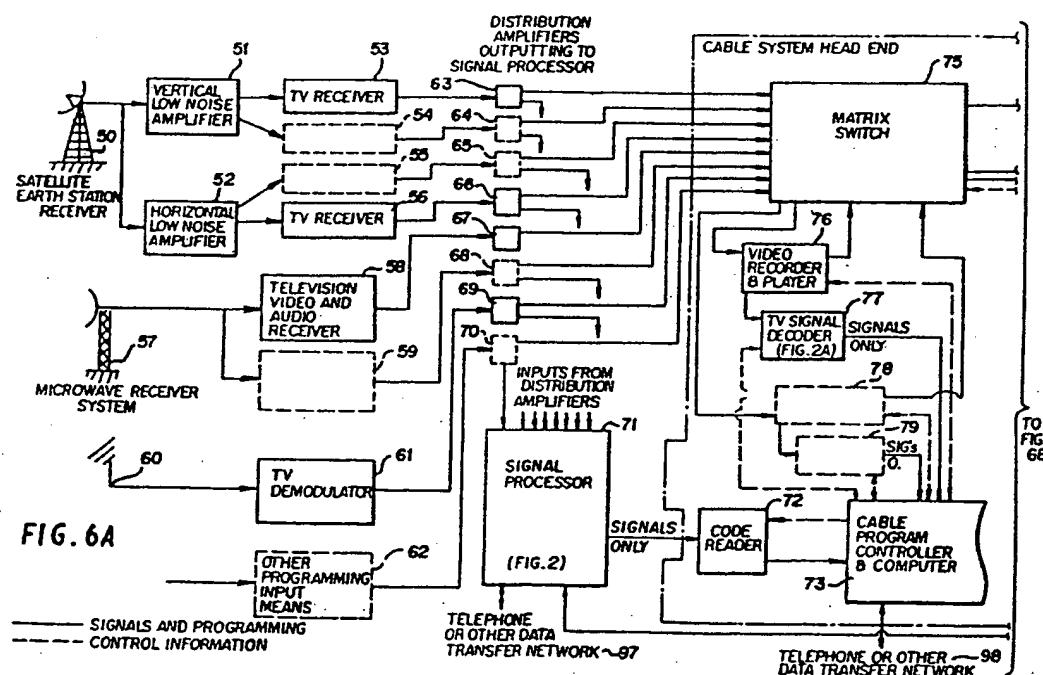
That is, the "multichannel television distribution means" is recited as part of a "multichannel television distribution system," but that does not define or otherwise describe the structure of the "multichannel television distribution means."

Nor do the words "multichannel television distribution" themselves connote sufficient structure. The term "television," of course, readily brings to mind a number of structures. The term "distribution," though, does not. One source, for example, defines "distribution" in functional terms, i.e., "All activities that involve efficient movement of finished products from the end of the production line to the consumer" (in the field of industrial engineering), as well as defines use of that word in mathematical and statistical contexts. *See McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS* 631 (6th ed. 2003). Another source, the *AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS* 328 (7th ed. 2000), describes use of "distribution" as an adjective in the switchgear/power engineering context, i.e., "[a] general term used, by reason of specific physical or electrical characteristics, to denote application or restriction of the modified term, or both, to that part of an electrical system used for conveying energy to the point of utilization from a source or from one or more main receiving stations," as well as in the software, network service and statistical

contexts. That is, the word "distribution" does not appear to connote structure, nor does it appear to do so in conjunction with the words "multichannel television."

Thus, it appears that the term "multichannel television distribution means" should be construed as a means-plus-function limitation under § 112(6). The claimed function, as discussed above, is "multichannel television distribution."

Again, Fig. 6 illustrates such a "multichannel television distribution system," namely, a cable system head end. According to Harvey *et al.*, "FIG. 6 illustrates Signal Processing Apparatus and Methods at an intermediate transmission station that is a cable television system 'head end' and that cablecasts several channels of television programming." Harvey IV, col. 182, lines 7-10; *see also id.* at col. 190, lines 35-37 ("This example has described methods at a multi-channel intermediate transmission station * * *"). Fig. 6, as noted before, is comprised of Figs. 6A:



and 6B:

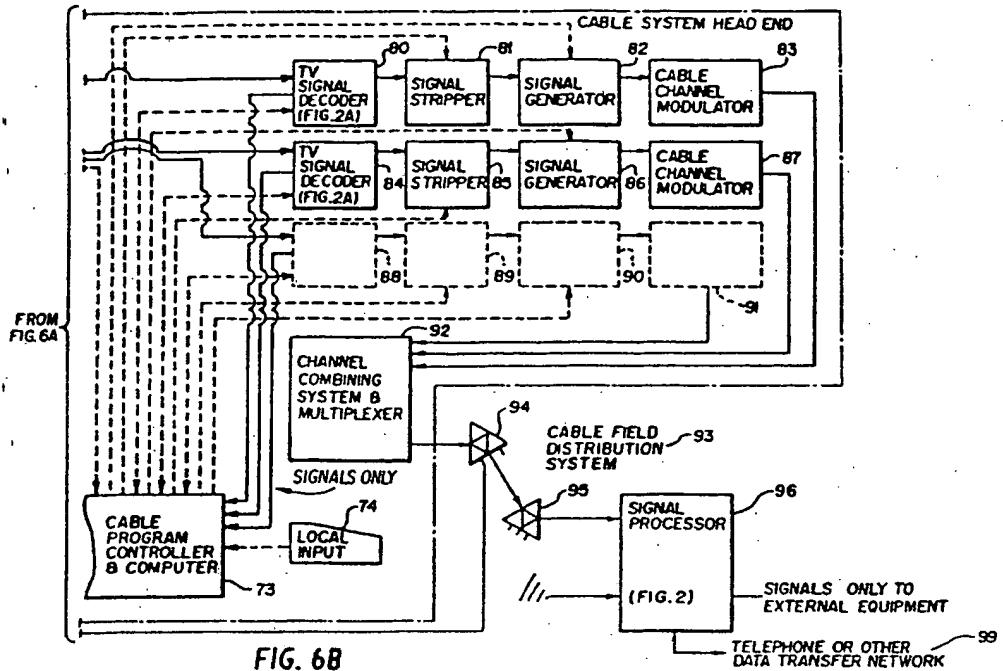


FIG. 6B

Once again, claim 9 calls for:

a matrix switch means for receiving said programming from said receiver/distribution means and for directing selected portions of said received programming to a recording device operatively connected to a multichannel television distribution means;"

As discussed above, the term "matrix switch means" was not construed under § 112(6), but was construed to simply mean a switch in which one or more inputs may be connected to one or more outputs. In any case, Fig. 6A depicts "matrix switch 75," as well as "video recorder and player 76," which corresponds to the claimed "recording device."

Claim 10 calls for the "matrix switch" to direct programming to the "multichannel television distribution means" rather than to a "recording device:"

a matrix switch means for receiving said programming from said receiver/distribution means and for directing selected portions of said received programming to a multichannel television distribution means;

Again, Fig. 6A depicts "matrix switch 75."

Thus, in claim 9, the disputed "means" is "operatively connected" to "video recorder and player 76," and in claim 10, the disputed "means" receives "selected portions" of programming from the "matrix switch 75." As for the "corresponding structures" that perform the function of "multichannel television distribution," Fig. 6B depicts "cable field distribution system 93," which appears to perform that function. Harvey *et al* explain that:

FIG. 6 illustrates Signal Processing Apparatus and Methods at an intermediate transmission station that is a cable television system "head end" and that cablecasts several channels of television programming. * * * * The station receives programming from many sources. * * * * Each receiver/modulator/input apparatus, 53 through 62, transfers its received transmissions into the station by hard-wire to a conventional matrix switch, 75, well known in the art, that outputs to one or more recorder/players, 76 and 78, and/or to apparatus that outputs said transmissions over various channels to the cable system's field distribution system, 93, which apparatus includes cable channel modulators, 83, 87, and 91, and channel combining and multiplexing system, 92. Programming can also be manually delivered to said station on prerecorded videotapes and videodiscs. When played on video recorders, 76 and 78, or other similar equipment well known in the art, such prerecorded programming can be transmitted via switch 75 to field distribution system, 93. [Emphasis added.]

Harvey IV, col. 182, lines 7-36. The foregoing, of course, describes what is called for in claims 9 and 10. In either case, *i.e.*, with or without a "recording device," the programming is sent to the "field distribution system 93," which, according to the specification, "includes cable channel modulators, 83, 87, and 91, and channel combining and multiplexing system 92."

Defendants further propose that the "corresponding structure" include amplifiers 94 and 95, as well as signal processor 96. Harvey *et al*, though, further explain:

FIG. 6 shows particular signal processor system monitoring apparatus associated with the intermediate station of FIG. 6. In field distribution system, 93, amplifier, 94, inputs programming transmissions to signal processor system, 71, (where said transmissions are inputted to one alternate contact of the switch, 1, of the signal processor of said system, 71), and amplifier, 95, inputs programming transmissions to signal processor, 96, which permits both signal processor apparatus to monitor all programming transmitted by the cable television system head end station to field distribution system, 93, in the fashion of the signal processor, 200, of FIG. 3 in example #5. By recording all different received "program unit iden-

tification code" information in the fashion described above, said signal processor apparatus can automatically record, for each transmission channel of the station of FIG. 6, information, for example, that the U.S. Federal Communications Commission requires broadcast station operators to maintain as station logs. And said signal processor apparatus can transmit such records of programming to remote sites via telephone or other data transfer networks, 97 and 99 respectively. In this fashion, said signal processor apparatus can automatically provide their contained records to one or more remote independent auditor stations.

Id. at col. 189, lines 1-25. From the foregoing, the amplifiers 94 and 95, and signal processor 96, are used to "monitor all programming transmitted by the cable television system head end station to field distribution system 93" rather than "multichannel television distribution" *per se*. It is true that those elements are described as "in" the field distribution system 93, but they are nevertheless not "clearly linked" to the function of "multichannel television distribution" because they appear to be functionally independent from the field distribution system, *i.e.*, they monitor the programming transmissions rather than distribute them. Harvey *et al.* further explain:

In the preferred embodiment, at least two signal processors (such as the signal processor of said system, 71, and signal processor, 96) monitor the transmissions of any given transmission station. One (e.g., the signal processor of said system, 71) is at said station which permits station personnel to inspect said one and ensure that said one is operating continuously and correctly. At least one other (e.g., signal processor, 96) is located at a site within the distribution system of said station (e.g., field system, 93) that is remote from the transmission station of said site, and said is inspected and serviced by independent auditor personnel. The records of said processors are regularly caused to be transmitted to one or more remote auditing stations (e.g., by networks, 98 and 99), in the fashions described above, and computers at said stations are caused to receive said records, compare said records with each other, and record any differences between the two sets of records are recorded. [Emphasis added.]

Id. at lines 26-44. Thus, it seems clear that although the amplifiers 94 and 95, and signal processor 96 might be located at the site of, or "within," field distribution system 93, those components do not perform the claimed function, and are not necessarily part of the "corresponding structure."

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The "multichannel television distribution means" in claims 9 and 10 should be construed as a means-plus-function limitation under § 112(6). The recited function is "multichannel television distribution." The structures "corresponding" to those functions are cable channel modulators, 83, 87, and 91, and channel combining and multiplexing system, 92, in cable field distribution system 93.

Under the terms of § 112(6), those limitations should therefore be construed to cover that corresponding structure and equivalents thereof.

VIII.
Harvey V

A. Disclosure

Harvey V issued from an application that was filed as a continuation of the application maturing into Harvey IV. Thus, Harvey IV and V share the same specification and drawings. Accordingly, the background and discussion of Harvey IV is applicable to Harvey V.

B. Summary of the Substantive Prosecution History

1. Original Application – March 10, 1992

Harvey *et al.* filed application Ser. No. 849,226 on March 10, 1992, as a continuation of the application maturing into Harvey IV. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 5 of 7) at PID01722. The application as filed does not seem to be included in the *Markman* record, but apparently contained 36 claims. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 5 of 7) at PID01814. (Office Action of August 21, 1992).

2. Office Action – August 21, 1992

In an office action of August 21, 1992, the examiner subjected all of the pending claims to restriction under 35 U.S.C. § 121, and divided the claims into two groups:

- I. Claims 1-32, drawn to data collection systems, methods and components, classified in Class 364, subclass 200.
- II. Claim 33-36, drawn to methods of processing control signals, and controlling equipment, classified in Class 380, subclass 20.

See Plaintiffs' Opening Markman Brief, Apx. F (Vol. 5 of 7) at PID01815. The examiner explained that “[t]he inventions are distinct, each from the other because *** [t]here appears to be no nexus between the categories of inventions, as neither group requires the particulars of the other group, nor do they address related fields of the art.” *Id.* Accordingly, the examiner advised Harvey *et al.* “that the response to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed.” *Id.*

3. Amendment – October 14, 1992

In response, Harvey *et al.* canceled all pending claims and submitted new application claims 1-33, and further added new application claims 37-74. *See Plaintiffs' Opening Markman Brief, Apx. F (Vol. 5 of 7) at PID01820-42.* In remarks accompanying the amendment, Harvey *et al.* “traverse[d] the restriction requirement set forth in the Office Action of August 21, 1992 to the extent that the examiner finds claim 33 to be drawn to methods of processing control signals and controlling equipment classified in Class 380, Subclass 20 as opposed to being drawn to a data collection system and methods classified in Class 364, Subclass 200.” Harvey *et al.* further urged that “review of claim 33 will demonstrate that it should have been grouped with claims 1-32 as opposed to 34-36. Otherwise, the applicants accede to the restriction requirement and elect group I for prosecution in this application.” *Id.* at PID01842-43.

4. Notice of Allowability – February 4, 1993

Apparently persuaded, the examiner issued a Notice of Allowability on February 4, 1993. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 5 of 7) at PID01879. It is not clear from the record (illegible copy) which claims were allowed.

5. Request For Clarification Of Status Of Claims – March 18, 1993

Subsequent the Notice of Allowability, Harvey *et al.*, unsure of the status of their claims *vis-à-vis* the examiner's restriction requirement, "request[ed] clarification of the status of claims allowed on February 4, 1993 in the above-referenced application." *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 5 of 7) at PID01887. According to Harvey *et al.*, the "Examiner's allowance of Claims 1-74 conflicts with the Office Action dated August 21, 1992 in which Examiner interposed a restriction requirement as to Claims 1-32 (Group I) and Claims 33-36 (Group II)." *Id.*

Harvey *et al.* stated that in their amendment of October 14, 1992, they had "traversed the restriction requirement as to Claim 33, pointing out that it belonged with Claims 1-32 as opposed to 34-36. Applicant otherwise acceded to the restriction requirement and elected Group I (Claims 1-32) for prosecution, and added new Claims 37-74." *Id.*

Thus, Harvey *et al.* urged, "[i]n consideration of the above and in accordance with MPEP § 821.02, Applicant believes that the Notice of Allowability for this application should apply to Claims 1-33 and 37-74, as opposed to Claims 1-74. Applicant therefore respectfully requests clarification of the status of the claims in this application." *Id.* at PID01887, -01889.

6. Supplemental Notice of Allowability - (date unknown)

Although the record is not clear why, the examiner apparently withdrew the restriction requirement for Harvey *et al.*'s pending claims and issued a supplemental Notice of Allowability, allowing the pending claims (1-33 and 37-74) to issue. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 5 of 7) at PID01890.

7. Issued Independent Claims

Harvey V issued with 71 claims, of which claims 1, 6, 7, 10, 13, 16, 21, 32, 33, 34, 37, 38, 59, 63 and 67 are independent. Of those independent claims, only claims 7, 10, 16, 34, 59 and 63 appear to contain disputed terms; thus, only those claims are reproduced below:

7. A receiver station system for processing information of a member of a broadcast or cablecast program audience and transferring output to at least one remote data collection station comprising

input means for inputting member information,

first memory means for storing said input information,

detector means for detecting in a broadcast transmission at least one instruction,

processor means operatively connected to said first memory means and said detector means for processing said input information in accordance with said instruction and outputting data that include additional information besides said input information,

second memory means for storing said data, and

transmission means for transmitting said data to said data collection station.

10. A receiver station system for processing information of a member of a broadcast or cablecast program audience and transferring output to at least one remote data collection station comprising

input means for inputting member information,

first memory means for storing said input information,

detector means for detecting in a broadcast transmission at least one datum,

processor means operatively connected to said first memory means and said detector means for processing said input information and said datum and outputting data that include additional information besides said input information,

second memory means for storing said data, and

transmission means for transmitting said data to said data collection station.

16. A receiver station system for processing information of a member of a broadcast or cablecast program audience and transferring output to at least one remote data collection station comprising

input means for inputting member information,

first memory means for storing said input information,

detector means for detecting in a broadcast transmission at least one datum,

first processor means operatively connected to said first memory means and said detector means for processing said input information and said datum and outputting data that include additional information besides said input information,

second memory means for storing said data,

transmission means for transmitting said data to said data collection station,

second detector means for detecting in a broadcast transmission at least one instruction, and

second processor means operatively connected to said transmission means and said second detector means for causing said transmission means to transmit said additional information in response to said instruction.

34. A receiver station system for processing, recording, and transferring information of a member of a broadcast program audience to at least one remote data collection station comprising

memory means for storing first information of said member,

first processor means for processing said first information and assembling output records that include additional information besides said first information,

recorder means for storing said output records,

transmission means for transmitting at least some output of said recorder to said data collection station,

detector means for detecting in a broadcast transmission at least one instruction, and

second processor means operatively connected to said transmission means and said detector means for causing said transmission means to transmit said output in response to said instruction.

59. A receiver station system for processing and recording information of a member of a broadcast program audience for at least one remote data collection station comprising

input means for inputting member information,

memory means for storing said input information, detector means for detecting in a broadcast transmission at least one instruction,

processor means operatively connected to said memory means and said detector means for processing said input information in accordance with said instruction and assembling output records that include additional information besides said input information, and

recorder means for storing said output records on a memory medium.

63. A receiver station system for processing and recording information of a member of a broadcast program audience for at least one remote data collection station comprising

input means for inputting member information,

memory means for storing said input information,

detector means for detecting in a broadcast transmission at least one datum,

processor means operatively connected to said memory means and said detector means for processing said input information and said datum and assembling output records that include additional information besides said input information, and

recorder means for storing said output records on a memory medium.

C. Agreed Term

The parties agree that the term "datum" requires no construction. See Joint Summary at 63.

D. Disputed Terms

1. "input means for inputting member information"

This limitation appears in claims 7, 10, 16, 59 and 63. Claim 7 is selected as representative, and is reproduced below, with the disputed term in boldface:

7. A receiver station system for processing **information of a member** of a broadcast or cablecast program audience and transferring output to at least one remote data collection station comprising

input means for inputting member information,

first memory means * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Input Means" should be construed under § 112, ¶ 6. The function performed is "inputting member information." The corresponding structures disclosed in the specification are "telephone keypads, typewriter or microcomputer keyboards, and microcomputers that are preprogrammed with information or receive it from a modem, as well as equivalents that were known when the patent issued."

"Member information" is "information of, relating to, or pertaining to a member."

Post-Hearing: [no change re "input means"]

The terms "information of a member" and "member information," should be construed to mean "information of, relating to, or pertaining to a member of a broadcast or cablecast audience."

DEFENDANTS' PROPOSED CONSTR.

"Input means for inputting member information" is construed under 35 U.S.C. § 112, ¶ 6. The function "inputting member information" means "entering facts or data about an individual audience member," i.e., inputting user specific information. [The corresponding structure is] (i) a microprocessor at the subscriber station having a 5 1/4" floppy disk drive; (ii) a microprocessor at the subscriber station having a built-in modem connected to a telephone or data communications network that is programmed to answer telephone calls to receive member information from another computer; and (iii) a microprocessor at the subscriber station programmed to automatically telephone a remote data services computer and cause the remote computer to transfer user specific information over a network to the microcomputer, and equivalents thereof.

Post-Hearing: Pursuant to 35 U.S.C. § 112, ¶ 6, "input means" means (i) a microcomputer at the subscriber station having a 5 1/4" floppy disk drive; (ii) a microcomputer at the subscriber station having a built-in modem connected to a telephone or data communications network that

is programmed to answer telephone calls to receive member information from another computer; and (iii) a microcomputer at the subscriber station programmed to automatically telephone a remote data services computer and cause the remote computer to transfer user specific information over a network to the microcomputer, and equivalents thereof.

"Information of a Member" and "Member Information" should be construed to mean "facts or data about an individual audience member, *i.e.*, inputting user specific information."

Plaintiffs' Harvey V Chart at 6, and Defendants' Harvey V Chart at 1-2; Joint Summary at 28-29.

The parties urge that the construction of "input means for inputting member information" should apply to that term as it appears in claim 10, 16, 59 and 63.

According to the JCCS, the parties agree that § 112(6) applies, and that the function is "inputting member information." However, the parties would then dispute the interpretation of that function, as well as the corresponding structure. JCCS at 8.

According to the plaintiffs, the parties agree that § 112(6) applies, but the defendants identify a number of peripheral structures, besides the microprocessor as part of the "input means" that do not perform the recited function, along with extraneous functional language that should be excluded. The plaintiffs contend that the 1987 specification discloses a variety of structures for inputting member information at a receiver station, including a "local input 225," and an alternative to that input, namely, a memory, *e.g.* RAM, ROM, floppy disc, etc. According to the plaintiffs, the defendants "inexplicably ignore these input means." The plaintiffs say that the 1987 specification also discloses a variety of structures for inputting member information, and that those structures are consistent with those disclosed in the 1987 specification. In particular, the plaintiffs urge that computer 205 can also input member information, such as the user's stock portfolio. The plaintiffs urge that the defendants ignore other disclosed "input means," namely, telephone key pads, typewriter or microcomputer keyboards, and microcomputers that are preprogrammed with information or receive it from a modem. Furthermore, the plaintiffs contend that the defendants urge an unduly narrow definition for "information of a member" and "member information." In particular, the plaintiffs

contend that fax or data "about" an audience member suggests a more restrictive definition than indicated by the claim. The plaintiffs urge that the term "member information" is properly construed to mean information from or about the audience member. Plaintiffs' Opening *Markman* Brief at 40-44.

The defendants contend that a manufacturer's cable box identification code is not "member information," but that the specification makes clear that "inputting member information" means entering facts or information about an individual audience member, *i.e.*, inputting user specific information. According to the defendants, the only corresponding structure specifically linked to the function of inputting member information is the microprocessor as set forth in their proposed construction. Defendants' Opening *Markman* Brief at 55-56. The defendants further urge that "inputting member information" means "entering user specific information," and that the "unique digital code information" identified by the plaintiffs "clearly is information about the receiver, not information about a 'member.'" Additionally, the defendants contend that "meter information" and "monitor information" are not "member information" that is input via the input means, but is calculated from the input member information, *i.e.*, an output. Finally, the defendants argue that the specification "explicitly links local input 225 with the function of inputting control information, not the claimed 'member information,'" and thus local input 225 is not corresponding structure. Defendants' Reply Brief at 14-16.

b) Discussion

The disputed limitation uses the word "means" followed by a recited function, and thus should presumptively be construed as a means-plus-function limitation under § 112(6). There does not appear to be sufficient structure recited in the claims for performing the claimed function to avoid the ambit of § 112(6). *See, e.g.*, DICTIONARY OF DATA PROCESSING 94 (2nd ed. 1981)(defining "input" as: "The process of transferring information from a PERIPHERAL UNIT into memory."). Construing this term pursuant to § 112(6), therefore, the recited function is "input means for inputting member information."

Before turning to the "corresponding structure," the dispute concerning the meaning of "member information" will be addressed. That term, of course, finds antecedent basis in the pre-

ambles of the asserted claims. The preamble of claim 7, as noted above, calls for: "A receiver station system for processing information of a member of a broadcast or cablecast program audience and transferring output to at least one remote data collection station comprising." A "member," as is commonly understood and as used in the claims, is simply "one of the individuals composing a group." *See MERRIAM-WEBSTER'S ONLINE DICTIONARY.*⁴⁴ In the context of the preamble of claim 7, for example, the "member" is one of the individuals composing a "broadcast or cablecast program audience." Not all of the asserted claims call for a "broadcast" or "cablecast" audience, however, and so such limitations clearly go beyond the plain meaning of "member information." For example, the preamble of claim 59 simply calls for: "A receiver station system for processing and recording information of a member of a broadcast program audience * * *." Thus, a "member," in the context of the claims, is one of the individuals composing a program audience, *i.e.*, the claims expressly define the group of which the "member" is a part. "Information," of course, is a broad and readily understood term that connotes "2 a (1) : knowledge obtained from investigation, study, or instruction (2) : INTELLIGENCE, NEWS (3) : FACTS, DATA b : the attribute inherent in and communicated by one of two or more alternative sequences or arrangements of something (as nucleotides in DNA or binary digits in a computer program) that produce specific effects c (1) : a signal or character (as in a communication system or computer) representing data (2) : something (as a message, experimental data, or a picture) which justifies change in a construct (as a plan or theory) that represents physical or mental experience or another construct d : a quantitative measure of the content of information," *see id.*, and so "member information" is simply facts or data about a member.

It is difficult to discern the parties' dispute from their proposed constructions, but at the *Markman* hearing, the defendants explained the dispute is as follows:

MR. ALTHERR: Now, the parties dispute what member information is. PMC puts forth that it can just relate to that station. It could be something like even as remote as like a Mac address, something that describes like a specific identifier for the processor in the receiver station.

⁴⁴ <http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=member> (last visited June 2, 2004).

We, on the other hand, believe it has to be information, an individual audience member.

Markman Tr. at 490:18-24. The plaintiffs, on the other hand, took a different view:

MS. KORDZIEL: It states that if you are interested in cooking what we are preparing here and want a printed copy of the recipe for a charge of only ten cents, press 657 on your widget signal generator and local input. The viewer then presses buttons 657 on local input 225, and so there are other structures, for example, key pads, numerical key pads where you can press in information and so our position is that for input means, there are other corresponding structures that S-A and this is one example that S-A has not addressed.

SPECIAL MASTER PETERSON: Well, that's not member information, is it?

MS. KORDZIEL: Well, our position is that it is member information, because our construction of member information is information of or relating to or pertaining to a member. So, for example, in this case, the 567 represents the member's interest in a particular recipe, and that's information of a member.

SPECIAL MASTER PETERSON: Member information is that a member wants a recipe?

MS. KORDZIEL: That's something that pertains to a particular member or it relates to. It doesn't have to be my name or something specific about a member, but it could be some of my member preferences, or something about the member that, for example, in this case, I want this recipe.

SPECIAL MASTER PETERSON: And your support for that is where?

MS. KORDZIEL: In this section.

SPECIAL MASTER PETERSON: No, your support for that member information can include you know, any attributions about a member like whether they want a recipe or they like the color blue or –

MS. KORDZIEL: That's correct, because member information –

SPECIAL MASTER PETERSON: No. No. What's your support for that?

MS. KORDZIEL: The plain meaning of member information, that it's a very broad term.

SPECIAL MASTER PETERSON: Okay.

Markman Tr. at 575:15 to 577:4. With that in mind, "member information" appears to be used in the claims to mean just that: information about a member of the program audience, not information about the member's receiver station, unless, of course, information about the member's receiver station also happens to be information about the member. "Member information" clearly includes, for example, "information on the portfolio of financial instruments owned by the subscriber" ("Wall Street Week" example, Harvey V, col. 12, lines 42-51), "records of the size of the family of the subscriber *** together with the tastes and dietary habits of the members of said family" (Exotic Meals of India, *id.* at col. 260, lines 29-32), and "data of the number and size of the individual parcels of property of the farmer's farm ***, and the financial resources of said farmer" (European farm planning example, *id.* at col. 295, lines 37-43). The defendants, though, would exclude certain types of information, such as "meter information" and "monitor information." With regard to those particular types of information, Harvey *et al.* explain that the signal processor "is focal means for the controlling and monitoring subscriber station operations:"

It meters communications and enables owners of information to offer their information to subscribers in many fashions on condition of payment. It has capacity for regulating communications consumption by selectively decrypting or not decrypting encrypted programming and/or control signals and capacity for assembling and retaining meter records at each subscriber station that document the consumption of specific programming and information at said station. It has capacity for identifying the subject matter of each specific unit of programming available on each of many transmission channels at each subscriber station as said unit becomes available for use and/or viewing which enables subscriber station apparatus to determine automatically whether the subject matter of said unit is of interest and, if so, to tune automatically to said programming. It has capacity, at each station, for receiving monitor information that identifies what programming is available, what programming is used, and how said programming is used and capacity for assembling and retaining monitor records that document said availability and usage. It has capacity for transferring said meter records automatically to one or more remote automated billing stations that account for programming and information consumption and bill subscribers and said monitor records automatically to one or more remote so-called "ratings" stations that collect statistical data on programming availability and usage. It has capacities for processing information in many other fashions that will become apparent in this full specification. [Emphasis added.]

Harvey V, col. 16, lines 10-44. From the foregoing, the meter/monitor information is clearly information about a subscriber's viewing habits and interests based on, *e.g.*, what programming is used

and when. That is, such information appears to be "member information." While it is true that meter/monitor information may be indirectly related to information programmed in by the subscriber, e.g., meter-monitor information corresponding to news concerning the subscriber's AT&T stock (*id.* at col. 233, lines 49-60),⁴⁵ and characterization of such information as "member information" may thus be questionable, meter/monitor information may also apparently directly reflect subscriber viewing habits, as noted above. That, of course, is not to require or suggest a particular degree of affinity between information and a member in order to qualify as "member information," but simply to illustrate that a blanket exclusion of meter/monitor information would be inappropriate.

Turning to the "corresponding structure," as noted above, the preamble of claim 7, as do the preambles of claims 10, 16, 59 and 63, place the invention in the context of a "receiver station system." "Receiver stations" are apparently end-user subscriber stations, and are also referred to as "ultimate receiver stations." *See, e.g.*, Harvey V, col. 7, lines 47-50 ("Such ultimate receiver stations may be private homes or offices or commercial establishments such as theaters, hotels, or brokerage offices."); and col. 23, lines 8-14 ("Hereinafter, stations that originate broadcast transmissions are called 'original transmission stations,' stations that receive and retransmit broadcast transmissions are called 'intermediate transmission stations,' and stations where subscribers view programming are called 'ultimate receiver stations.'"). Thus, in identifying "corresponding structure," the focus is on "receiver stations."

⁴⁵ *See also id.* at col. 27, lines 43-68 ("Meter-monitor segments contain meter information and/or monitor information. Examples of categories of such information include: meter instructions that instruct subscriber station meter apparatus to record particular meter-monitor segment information and maintain meter records of said information; origins of transmissions (e.g., network source stations, broadcast stations, cable head end stations); dates and times; unique identifier codes for each program unit (including commercials); codes that identify uniquely each combining in a given combined medium program unit; codes that identify the subject matter of a program unit; unique codes for programming (other than programming identified by program unit codes) whose use obligates users to make payments (e.g., royalties and residuals); and unique codes that identify the sources and suppliers of computer data. The categories listed here provide only examples. Other types of information can exist in meter information and/or in monitor information, as will become apparent in this full specification.").

One such "receiver station" is illustrated in Fig. 1, which "shows a video/computer combined medium subscriber station." *Id.* at col. 11, lines 12-13.

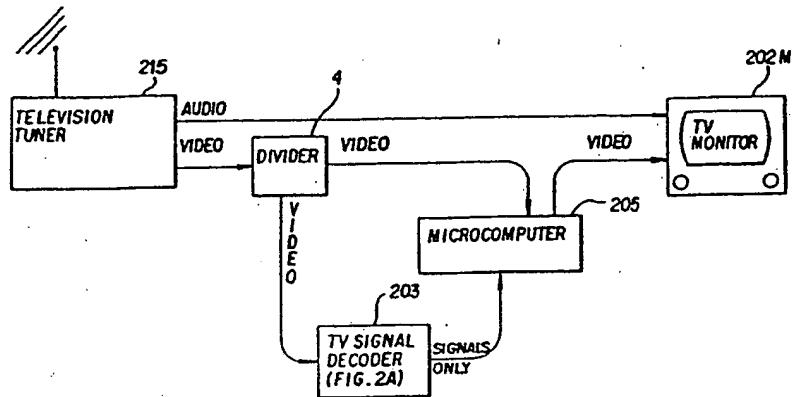


FIG. 1

In connection with Fig. 1, Harvey *et al.* explain that "[v]ia conventional antenna, the station receives a conventional television broadcast transmission at television tuner, 215," which "outputs conventional audio and composite video transmissions" "to TV monitor, 202M." According to Harvey *et al.*, "[t]he video transmission is inputted to video transmission divider, 4, which is a conventional divider that splits the transmission into two paths. One is inputted continuously to TV signal decoder, 203, and the other to microcomputer, 205. * * * * Microcomputer, 205, is a conventional microcomputer system with disk drives that is adapted to have capacity for receiving signals from decoder, 203; for generating computer graphic information; for receiving a composite video transmission; for combining said graphic information onto the video information of said transmission by graphic overlay techniques, well known in the art; and for outputting the resulting combined information to a TV monitor, 202M, in a composite video transmission."⁴⁶ *Id.* at lines 14-46. Harvey *et*

⁴⁶ According to Harvey *et al.*, "[o]ne such system is the IBM Personal Computer of International Business Machines Corporation of Armonk, N.Y. with an IBM Asynchronous Communications Adapter installed in one expansion slot and a PC-MicroKey Model 1300 System with Techmar Graphics Master Card, as supplied together by Video Associates Labs of Austin, Tex., installed in two other slots. Microcomputer, 205, receives digital signals from decoder, 203, at its asynchronous communications adapter and the video transmission from divider, 4, at its PC-MicroKey 1300 System. It outputs the composite video transmission at its PC-MicroKey System. Microcomputer, 205, has all required operating system capacity--e.g., the MS/DOS Version 2.0 Disk Operating System of Microsoft, Inc. of Bellevue, Wash. with installed device drivers." *Id.* at lines 46-61.

al. provide a number of examples in which a microcomputer disk drive is used for "inputting member information." In connection with Fig. 1, for example, in the "Wall Street Week" scenario, "microprocessor, 205, contains a conventional 5 1/4" floppy disk at a designated one of its disk drives that holds a data file recorded in a fashion well known in the art. Said file contains information on the portfolio of financial instruments owned by the subscriber that identifies the particular stocks in the portfolio, the number of shares of each stock owned at the close of business each business day from the end of the previous week, and the closing share prices applicable each day." *Id.* at col. 12, lines 20-29. "Under control of [a] program instruction set [sent from the program originating studio] and accessing the subscriber's contained portfolio data file for information in a fashion well known in the art, microcomputer, 205, calculates the performance of the subscriber's stock portfolio and constructs a graphic image of that performance at the installed graphics card." *Id.* at col. 14, lines 12-18. *See also, e.g., id.* at 260, lines 27-38 ("The microcomputer, 205, of the station of FIG. 7 and 7F, is preprogrammed to receive and process automatically meal recipe instructions and holds records of the size of the family of the subscriber of said station together with the tastes and dietary habits of the members of said family. For example, particular information is recorded in a file named DATA_OF.URS that is on a so-called 'floppy disk' that is loaded at the A: disk drive at said microcomputer, 205. Said information specifies that said family prefers particular very hot and spicy foods, prefers to minimize salt consumption, and consists of four adults."); and col. 295, lines 34-43 ("Particular farm information of the specific farm of each farmer is recorded in a file named MY_FARM.DAT on a disk at the A: disk drive of the microcomputer, 205, of each station. The recorded data includes, for example, data of the number and size of the individual parcels of property of the farmer's farm, the soil conditions of said parcels, the aspects of said parcels with respect to sunlight and shade, the history of crop rotation of said parcels, the farm equipment of said farmer, and the financial resources of said farmer."). Thus, a microcomputer disk drive is one "corresponding structure" for "inputting member information."

As the defendants point out, the specification also explains that "member information" may be input automatically over telephone or data lines to a microcomputer equipped with a modem:

Microcomputer, 205, has an installed modem; receives information that is transmitted by means of telephone or data communications network, 262; is preprogrammed to answer telephone calls automatically, in a fashion well known in the

art; and is preprogrammed to process data received via said network, 262. Each time the stockbroker who represents the subscriber of the station of microcomputer, 205, executes a transaction (that is, buys or sells stocks) for said subscriber's account, a computer at said broker's office station telephones microcomputer, 205; inputs data of the transaction (which data includes, for example, the identity of the company whose shares were traded, the number of shares bought or sold, and whether the transaction was a buy or a sale); and causes microcomputer, 205, to update its stock portfolio records in a predetermined fashion (for example, by adding to said records data of shares bought and removing data of shares sold).

Id. at col. 249, lines 4-21. While it is not clear which figure corresponds to the foregoing disclosure, Fig. 7C depicts a telephone/data network connection to the microcomputer:

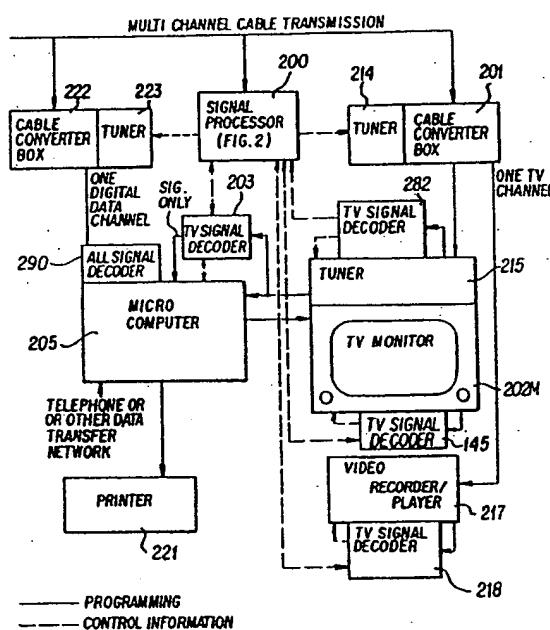


FIG. 7C

In any case, in the foregoing excerpt, the microcomputer/modem answers the call from the broker. Harvey *et al.* also explain, though, that the microcomputer/modem may initiate a call:

Alternatively, microcomputer, 205, is caused in a predetermined fashion (for example, by a SPAM message a given transmission monitored by signal processor, 200, in any of the above described fashions) automatically to telephone a remote data service computer, by means of network, 262, in a fashion well known in the art, and to cause said remote computer to select and transmit the particular clos-

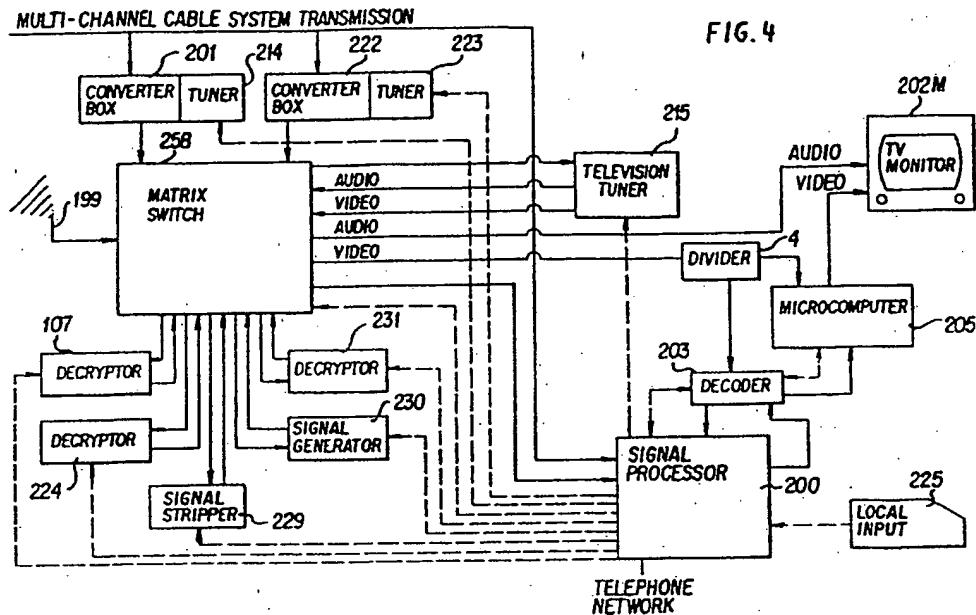
ing price datum or data of the stock or stocks of the portfolio of said microcomputer, 205, thereby causing said microcomputer, 205, to record said datum or data in a predetermined fashion. [Emphasis added.]

Id. at lines 43-54. Thus, a microcomputer modem connected to a telephone or data communication network is another "corresponding structure" for "inputting member information."

The plaintiffs propose that a microcomputer preprogrammed with information is also "corresponding structure." It does not appear, though, that "member information," according to the specification, is input through preprogramming. In a section entitled "Preprogramming Receiver Station Operating Systems," Harvey *et al.* explain that their invention "provides means and methods whereby one remote system"master control station can preprogram all intermediate transmission stations and ultimate receiver station in a given geographical area (such as, for example, the continental United States of America) by transmitting a given sequence of SPAM messages that contain operating system instructions which sequence is received at and processed by all receiver stations and from which selected stations select selected messages that contain instructions of specific relevance."⁴⁷ *Id.* at col. 286, lines 54-64. That is, preprogrammed information is microcomputer operating system instructions, not "member information." In all, Harvey *et al.* do not appear to disclose "inputting member information" via a preprogramming transmission.

⁴⁷ Harvey *et al.* explain that "[r]eceiver station apparatus of the present invention is extensive and can vary greatly from station to station. For example, apparatus that requires preprogramming at the station of FIG. 7, includes microcomputer, 205; controllers, 12 and 20, of signal processor, 200; the RAMs associated with the processors, 39B and 39D, and with the control processor, 39J, of decoder, 30, of signal processor, 200; and the RAMs associated with the processors, 39B and 39D, and with the control processor, 39J, of other decoders of said station such as decoders, 203 and 282." *Id.* at col. 286, lines 19-29.

The parties also dispute whether "local input 225," such as that first illustrated in Fig. 4, is "corresponding structure."



According to Harvey *et al.*, Fig. 4 "shows local input, 225, well known in the art, which has means for generating the transmitting control information to controller, 20, of signal processor, 100. The function of local input, 225, is to provide means whereby a subscriber may input information to the signal processor of his subscriber station, thereby controlling the functioning of his personal signal processor system is specific predetermined fashions that are described more fully below[.] In the preferred embodiment, local input, 225, is actuated by keys that are depressed manually by the subscriber in the fashion of the keys of a so-called touch-tone telephone or the keys of a typewriter (or microcomputer) keyboard." [Emphasis added.] *Id.* at col. 160, lines 32-44. The defendants say that the "local input 225" cannot be corresponding structure because it is for inputting control signals, which the defendants say are not "member information." In the figures, the defendants point out, the "local input 225" is shown connected by a dashed line, which signifies control information, to the signal processor 200. But the defendants have pointed to nothing in the specification that says that control information cannot also be "member information." Indeed, the specification suggests otherwise – for example, in the "Exotic Meals of India" cooking show. According to Harvey *et al.*,

Fig. 7F illustrates a method for generating and communicating information to selected subscribers through the coordination of computers, television, and broadcast print," i.e., the cooking show, as well as "use of a local input, 225." *Id.* at col. 260, lines 22-26.

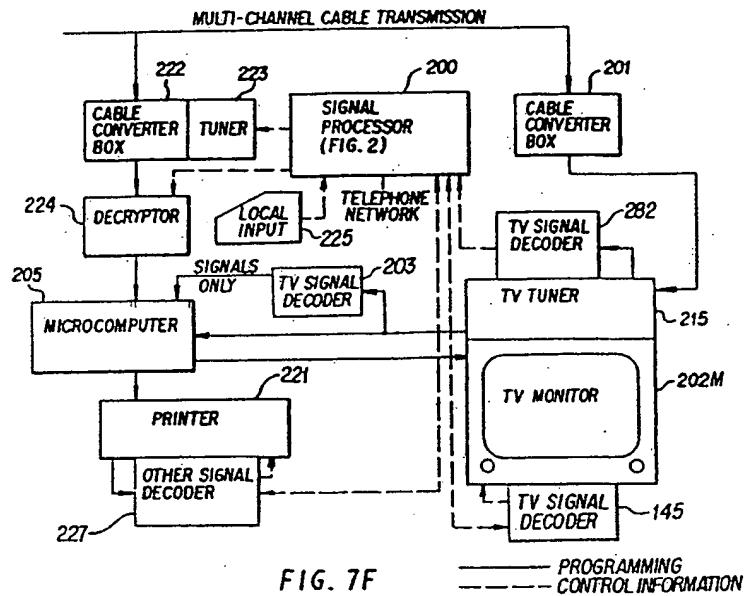


FIG. 7F

— PROGRAMMING
— CONTROL INFORMATION

As discussed above, the disk drive of microcomputer 205 holds data on the taste and dietary preferences of the subscriber. In any case, Harvey *et al.* explain that the cooking show "is devoted to the subject of cooking a particular fish curry that can be mild or moderately hot and spicy or, as a Vindaloo, very hot and spicy." *Id.* at col. 261, lines 30-32. The program is transmitted to the receiver station of Fig. 7F. During the program, the subscriber is given the opportunity to print a copy of the featured recipe tailored to his tastes:

Halfway through the program the host says, "If you are interested in cooking what we are preparing here and want a your own printed copy of the recipe tailored to your own tastes and your own shopping list for a charge of only 10 cents, enter on your Widget Signal Generator and Local Input the information that you see on your screen." The information that appears on the screen of each subscriber is "TV567#".

Each subscriber *** enters TV567#, in a fashion well known in the art, at the keyboard of the specific local input, 225, of his own station which causes said input, 225, to transmit a particular preprogrammed process-local-input instruction

and said TV567# information to the controller, 20, of the signal processor, 200, of said station.

Id. at lines 33-49. If, for example, the taste and dietary preferences of the subscriber tend toward the hot and spicy, the receiver station will thereafter generate a custom recipe, as well as a shopping list of ingredients necessary to prepare the dish. *See id.* at col. 261, line 50 to col. 264, line 16. Undoubtedly, the defendants are correct that the input information, i.e., "TV567," is control information. However, it also appears that it is "member information" in that it specifically indicates a subscriber's preference, i.e., contains information about that subscriber.

Harvey *et al.* also provide another example of using "local input 225" for inputting member information. In the "Farm Plans of Europe" example, Harvey *et al.* explain that "each farmer's microcomputer, 205, under control of the particular program instruction set generated and transmitted by its local intermediate station, computes its particular farmer's 'optimal' crop planting plan by making reference to said farmer's specific data that includes, for example, the number and size of the individual parcels of property of the farmer's farm, the soil conditions of said parcels, * * * and the financial resources of said farmer; by using said data as so-called 'constraints'; and by applying information * * * [that] includes the specific market price information and projected aggregate amount of farm borrowing transmitted by said European master network control station * * *; the specific national subsidy formulas and items regarding each alternate crop that national farmers may grow, the specific national tax formulas and depreciation schedules, and the specific national monetary growth and interest rates * * *." [Emphasis added.] *Id.* at col. 304, lines 23-46. Then, "under control of its received program instruction set, the microcomputer, 205, of its farmer's station records complete information of said farmer's crop planting plan at its A: disk in a file named PLANTING.DAT." *Id.* at col. 305, lines 7-11. Harvey *et al.* then explain that the farmer may customize the crop planting plan generated by the microcomputer:

In due course, the instructions of the program instruction set received at each farmer's station cause a particular module, TELEPHON.EXE, to be recorded at a particular disk drive of the microcomputer, 205, of each farmer's station * * * which, when executed, will permit the farmer to modify the information of his specific crop planting plan and associated budget and to transmit the specific information of his plan (as modified if modified) to a particular data collection computer at a remote station.

* * *

After studying his specific crop planting plan and associated budget projections, his associated sensitivity analyses, and the output information of the selected commercial spots of his station, each farmer loads and runs his prerecorded module, TELEPHON.EXE, in a fashion well known in the art. Under control of the instructions of the TELEPHON.EXE module of his station controlling the operation of his signal processor, 200, each farmer enters information at his local input, 225, that modifies the information of his file, "PLANTING.DAT," to suit his own wishes and inclinations then executes particular information of said TELEPHON.EXE module that causes the instructions of said module to cause his signal processor, 200, to transmit the information of his "PLANTING.DAT" file, via telephone network in the fashion of example #10, to a computer at a particular remote data collection station. [Emphasis added.]

Id. at col. 306, lines 52-62, col. 307, lines 24-40. Undoubtedly, the farmer's "wishes and inclinations" are no less so "member information" than the subscriber's dietary tastes in the cooking show example. That information is input via "local input 225," which is thus "corresponding structure." As noted above, the "local input 225" is "actuated by keys that are depressed manually by the subscriber in the fashion of the keys of a so-called touch-tone telephone or the keys of a typewriter (or microcomputer) keyboard." *Id.* at col. 160, lines 40-44.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The "input means" in claims 7, 10, 16, 59 and 63 should be construed as a means-plus-function limitation under § 112(6). The recited function is "inputting member information." The term "member information" means facts or data about a member. The structures "corresponding" to that function are a microcomputer disk drive, a microcomputer modem connected to a telephone or data communication network, and "local input 225" "actuated by keys that are depressed manually by the subscriber in the fashion of the keys of a so-called touch-tone telephone or the keys of a typewriter (or microcomputer) keyboard."

Under the terms of § 112(6), those limitations should therefore be construed to cover that corresponding structure and equivalents thereof.

2. "memory means"

Claims 34, 59 and 63 call for "memory means." Claims 7, 10 and 16 call for a "first memory means" and a "second memory means," and claim 8 further calls for a "third memory means." The parties agree that those "memory means" limitations, although reciting different functions, should be construed together because they rely on the same "corresponding structure." *See* Joint Summary at 29 n.39. Claim 7 is again selected as representative, and is reproduced in pertinent part below, with the disputed term in boldface:

7. A receiver station system for processing information of a member of a broadcast or cablecast program audience and transferring output to at least one remote data collection station comprising

input means for inputting member information,

first memory means for storing said input information,

detector means * * *,

processor means * * *,

second memory means for storing said data, and

transmission means for transmitting said data to said data collection station.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Memory Means" should be construed under § 112, ¶6. The function performed is "storing the input information." The corresponding structures disclosed in the specification are "a RAM, EPROM, buffer, comparator, floppy disk, register, or computer memory, and any equivalents that were known when the patent issued."

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

"Memory means for storing said input information" is construed under 35 U.S.C. § 112, ¶ 6. The function "storing said input information" means "placing or leaving 'member information' in a location (as a ... computer memory) for preservation or later use or disposal. [The corresponding structure is] a disk drive defined in the specification as microcomputer 205 and equivalents thereof."

Post-Hearing: [no change]

Plaintiffs' Harvey V Chart at 10; Defendants' Harvey V Chart at 7-8; Joint Summary at 29-30.

The parties urge that the construction of "memory means for storing said input information" should apply to that term as it appears in claim 10, 16, 34, 59 and 63 (albeit with perhaps a different recited function).

According to the JCCS, the parties agree that § 112(6) applies, and that the function should be a verbatim recitation of the claim language. However, the parties would then dispute the interpretation of that function, as well as the corresponding structure. JCCS at 8.

Defendants contend that the disk drive at microcomputer 205 is the only structure disclosed in the specification for performing the recited function. Defendants' Opening *Markman* Brief at 57.

The plaintiffs do not address this term in their *Markman* briefs.

b) Discussion

This limitation uses the word "means" followed by a stated function, and thus presumptively should be construed as a means-plus-function limitation under § 112(6). However, the word "memory" has long held a structural connotation in the computing field. For example, one source defines "memory" as "(1) Any device into which data can be entered, held and subsequently retrieved. (2) In general use, the MAIN MEMORY of a computer, and excluding any BACKING STORAGE." DICTIONARY OF DATA PROCESSING 121 (2nd ed. 1981). Another source, the ILLUSTRATED DICTIONARY OF MICROCOMPUTERS 221-2 (3rd ed. 1990), defines "memory" as "[a] basic component of a computer that stores information for future use." More recently, the MICROSOFT COMPUTER DICTIONARY 333 (5th ed. 2002) has explained that "memory" is "[a] device where information can be stored and retrieved. In the most general sense, memory can refer to external storage such as disk drives or tape drives; in common usage, it refers only to a computer's main memory, the fast semiconductor storage (RAM) directly connected to the processor. *See also* core, EEPROM, EPROM, flash memory, PROM, RAM, ROM. Compare bubble memory, mass storage." Clearly, the term "memory" connotes sufficient structure for performing the various recited functions of "storing ***" to avoid construction under § 112(6). Additionally, the term "memory" is also clearly broad enough to include a wide variety of devices, such as disk drives, EPROMS, RAM, etc.

Furthermore, the specification uses the term "memory" in the sense discussed above. For example, in connection with Fig. 2, Harvey *et al.* describe various forms of "memory."

Signal processor, 26, has a controller device which includes programmable RAM controller, 20; ROM, 21, that may contain unique digital code information capable of identifying signal processor, 26, and the subscriber station of said processor, 26, uniquely; an automatic dialing device 24; and a telephone unit, 22. A particular portion of ROM, 21, is erasable programmable ROM (hereinafter, "EPROM") or other forms of programmable nonvolatile memory. Under control particular preprogrammed instructions at that portion of ROM, 21, that is not erasable, signal processor, 26, has capacity to erase and reprogram said EPROM in a fashion that is described more fully below. Controller, 20, has capacity for controlling the operation of all elements of the signal processor and can receive operating information from said elements. Controller, 20, has capacity to turn off any element or elements of controlled subscriber station apparatus, in whole or in part, and erase any or all parts of erasable memory of said controlled apparatus.

Harvey V, col. 18, line 61 to col. 19, line 12.

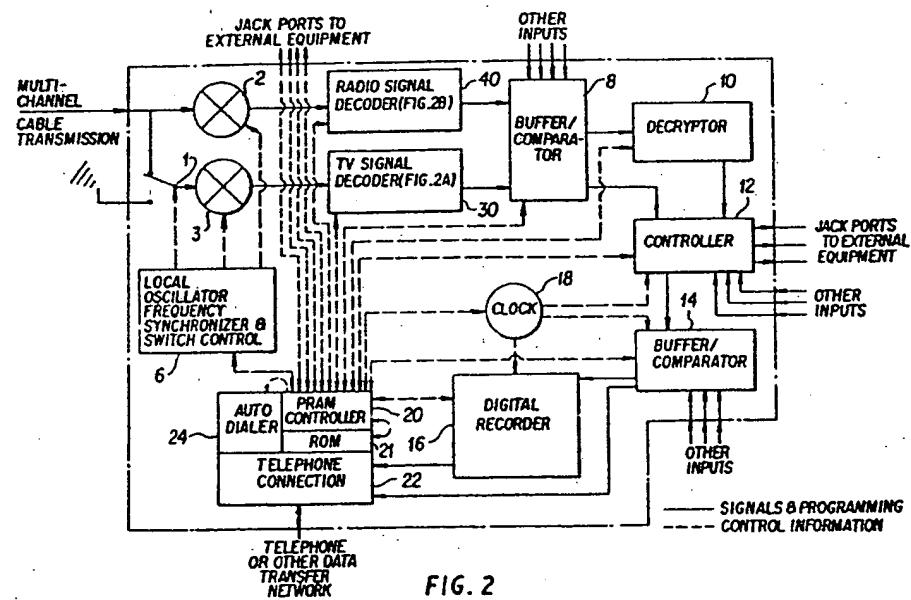


FIG. 2

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The term "memory means" should not be construed as a means-plus-function limitation under § 112(6). A "memory" is a device where information can be stored and retrieved.

3. "detector means for detecting in a broadcast transmission at least one instruction"

This term appears in claims 7, 10, 16, 59 and 63. Again, claim 7 is representative, and is reproduced below in pertinent part, with the disputed term in boldface:

7. A receiver station system for processing information of a member of a broadcast or cablecast program audience and transferring output to at least one remote data collection station comprising

input means for inputting member information,

first memory means for storing said input information,

detector means for detecting in a broadcast transmission at least one instruction,

processor means * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[If] § 112(6) is invoked, * * * the recited function of "detector means" in Claim 7 is "for detecting in a broadcast transmission at least one instruction." The corresponding structure disclosed in the specification is a digital detector (*e.g.*, see digital detectors 34, 37, 38, 43 and 46 of Figures 2A-2C of [Harveys I and III] and equivalents known at the time the patent issued).

"Detector Means" should not be construed under § 112¶6, but should be construed to mean a detector, as that term is generally understood by

DEFENDANTS' PROPOSED CONSTR.

"Detector means for detecting in a broadcast transmission at least one instruction" should be construed under 35 U.S.C. § 112, ¶6. However, the specification lacks any particular structure that is linked to performing the function of detecting an instruction in a broadcast transmission, *i.e.* over-the air transmission. * * * Instead, the specification merely describes a detector in functional terms, *i.e.*, as a device that "acts to detect the digital signal information embedded in [the information which constitutes the video transmission]." * * * Accordingly, there is no

persons of ordinary skill in this art.

"Detecting" means determining the presence of a signal or "extracting intelligence from a signal."

"Broadcast Transmission" should be given its ordinary meaning, which is "transmitting information from one location to multiple locations."

"Instruction" to have an ordinary meaning in the art, which is "data or information that directs a processor in performing an operation."

Post-Hearing: 35 U.S.C. § 112(6) does not apply to "detector means." The term "detector means" should be construed to mean a detector, as that term is generally understood by persons of ordinary skill in this art."

If § 112(6) applies, then the functional recitation is "for detecting in a broadcast transmission at least one instruction." The corresponding structures include "digital detectors 34, 37, 38, 43 or 46 as depicted in Figures 2A-2C of '825 patent, as well as equivalents known at the time the patent issued."

The term "broadcast transmission" should be construed to mean a "transmission of information from one location to multiple locations."

The term "instruction" should be construed to mean "data or information that directs a processor in performing an operation."

Plaintiffs' Harvey V Chart at 12-13; Defendants' Harvey V Chart at 8-9; Joint Summary at 30-31.

The parties urge that the construction of "detector means for detecting in a broadcast transmission at least one instruction" should apply to that term as it appears in claim 10, 16, 34, 59 and 63 (albeit with perhaps a different recited function).

According to the JCCS, the parties dispute whether § 112(6) applies, but agree that if it does, then the function is a verbatim recitation of the claim language. However, the parties would then

dispute the interpretation of that function, as well as the corresponding structure. If § 112(6) does not apply, then the parties dispute the proper definition of the term. JCCS at 9.

The defendants contend that the disputed term should be construed as a means plus function limitation, and that “broadcast transmission” is expressly defined in the specification as “over the air” transmission. Furthermore, the defendants contend the specification does not disclose sufficient structure for performing the function of detecting an instruction in a broadcast transmission, i.e., over-the-air transmission. Defendants’ Opening *Markman* Brief at 58-59.

The plaintiffs urge that § 112(6) does not apply to the disputed term, and that “[d]etectors are conventional devices well-known in the art for detecting specific signals, usually digital signals, within a wider transmission of information or programming.” Plaintiffs further contend that “instruction” means “information that assists in carrying out an operation,” and that the dictionary definitions proffered “do not support limiting ‘instruction’ to a code.” Plaintiffs’ Opening *Markman* Brief at 30-32 and 37-39.

b) Discussion

The term “detector means” was discussed earlier in connection with Harvey IV, and was construed not to be a means-plus-function limitation under § 112(6). Also, the defendants’ arguments regarding lack of enablement were addressed there, as well. That reasoning applies with equal force here, and is thus adopted.

Also, the term “broadcast transmission” was construed above in connection with the term “broadcast transmission means” in Harvey IV, and “broadcast transmission” was construed to mean a wireless or over-the-air transmission from one location to many locations. That construction applies with equal force here. Again, the claims of Harvey IV and Harvey V rely on the same specification.

The parties also dispute the meaning of the word “instruction.” Both parties’ proposed constructions appear to be defining “instruction” in terms of directing the operation of a processor or computer. In some contexts, that is too narrow a definition for the term “instruction” *per se*. Har-

vey *et al.* use the term "instruction" in a broader sense on occasions, as in directing a person to perform a task or operation:

After studying his specific crop planting plan and associated budget projections, his associated sensitivity analyses, and the output information of the selected commercial spots of his station, each farmer loads and runs his prerecorded module, TELEPHON.EXE, in a fashion well known in the art. Under control of the instructions of the TELEPHON.EXE module of his station controlling the operation of his signal processor, 200, each farmer enters information at his local input, 225, that modifies the information of his file, "PLANTING.DAT," to suit his own wishes * * *. [Emphasis added.]

Harvey V, col. 307, lines 24-34.. That is, Harvey *et al.* used the term in that context to mean "an outline or manual of technical procedure: DIRECTIONS." See WEBSTER'S NEW COLLEGiate DICTIONARY 591 (1981). Nevertheless, in the context of the disputed limitation, namely, "detector means for detecting in a broadcast transmission at least one instruction," Harvey *et al.* clearly intended a different sort of definition for the term "instruction," i.e., "a code that tells a computer to perform a particular operation." See *id.* In that regard, the only apparent substantial distinction between the parties is that the defendants define an "instruction" as a "code," while the plaintiffs refer to the "instruction" as "data or information." The sources at hand do not, though, uniformly define an "instruction" in the computer context in terms of "code." Rather, such sources define "instruction" in terms of "a series of characters," see THE PENGUIN DICTIONARY OF COMPUTERS 219 (2nd ed. 1981), a "statement," see DICTIONARY OF INFORMATION TECHNOLOGY 172 (2nd ed. 1986), a "pattern of digits," see McGRAW-HILL DICTIONARY OF ELECTRONICS AND COMPUTER TECHNOLOGY 269 (1984), and a "set of bits," see DICTIONARY OF DATA COMMUNICATIONS 250 (2nd ed. 1985)(definition of "instruction" in full: "A set of bits which will cause a computer to perform certain prescribed operations. A computer instruction consists of: 1. an operation code which specifies the operation(s) to be performed; 2. one or more operands (or addresses of operands in memory); 3. one or more modifiers (or addresses of modifiers) used to modify the operand or its address.").

More recently, the MODERN DICTIONARY OF ELECTRONICS (7th ed. 1999), at 378, has explained that an "instruction" is:

1. Information that, when properly coded and introduced as a unit into a digital computer, causes the computer to perform one or more of its operations. All instructions commonly include one or more addresses.
2. A binary code applied to a logic circuit to affect its mode of operation.
3. A statement that specifies an operation and the values or locations of its operands. In this context, the term *instruction* is preferable to the terms *command* or *order*, which are sometimes used synonymously.
4. A set of bits that defines a computer operation and is a basic command understood by the CPU. It may move data, do arithmetic and logic functions, control I/O devices or make decisions as to which instructions to execute next.
5. In a computer, a single order within a program. This order will be fetched from memory, decoded, and executed by the CPU. Instructions may be arithmetic or logical, and operate on registers, memory, I/O devices, or specify control operations. A sequence of instructions is a program.
6. A machine-language command executed by the microprocessor in a computer system.

Ultimately, it would seem that one of ordinary skill in the art would understand that an "instruction" carries information, and may be structured into a "code," "statement" or "set of bits" etc. that instruct a computer or processor to perform or execute an operation.

In Harvey V, the "instructions" are apparently carried in SPAM⁴⁸ signals. According to Harvey *et al.*, "SPAM signals control and coordinate a wide variety of subscriber stations," including "so-called 'local affiliate' broadcast stations that receive and retransmit single network transmissions; so-called 'cable system headends' that receive and retransmit multiple network and local broadcast station transmissions; and so-called 'media centers' in homes, offices, theaters, etc. where subscribers view programming." Harvey V, col. 23, lines 1-8. At those stations, "SPAM signals address, control, and coordinate diverse apparatus," such as "various kinds of receivers and tuners; transmission switches and channel selectors; computers; printers and video and audio display apparatus; and

⁴⁸ As noted above in footnote 23, SPAM means Signal Processing Method and Apparatus.

video, audio, and digital communications transmission recorders but also signal processor system apparatus including decoders; decryptors; control signal switching apparatus; and the communications meters, called signal processors, of the present invention," as well as "subscriber station control apparatus such as, for example, furnace control units whose operations are automatic and are improved with improved information and subscriber station meter apparatus such as, for example, utilities meters that collect and transmit meter information to remote metering stations." *Id.* at lines 15-33.

According to Harvey *et al.*, "[t]he information of SPAM signals includes data, computer program instructions, and commands. Data and program instructions are often recorded in computer memories at subscriber stations for deferred execution. Commands are generally for immediate execution and often execute computer programs or control steps in programs already in process." [Emphasis added.] *Id.* at lines 34-40. In the specification, Harvey *et al.* explain, "instances of computer program information that cause ultimate receiver station apparatus to generate and display user specific information are called 'program instruction sets.'" *Id.* at lines 52-56. From the foregoing, it is clear that Harvey *et al.* also used the word "instruction" to mean information that directs a computer or processor to perform an operation.

Harvey *et al.* do not, however, require an "instruction" to be a "code" *per se* in the narrow sense of the word. Fig. 2E illustrates a typical SPAM signal:

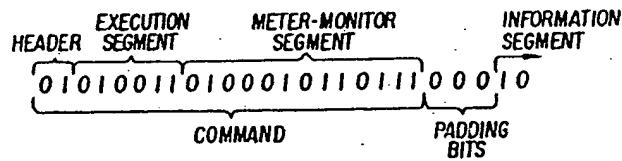


FIG. 2E

According to Harvey *et al.*, "[t]he information in FIG. 2E commences with a header which is particular binary information that synchronizes all subscriber station apparatus in the analysis of the information pattern that follows. Following said header are three segments: an execution segment, a meter-monitor segment, and an information segment. As FIG. 2E shows, the header and execution and meter-monitor segments constitute a command." *Id.* at col. 24, line 63 to col. 25, line 5. Also seen in Fig. 2E is an "information segment" According to Harvey *et al.*, "[i]nformation segments

follow commands and can be of any length. Program instruction sets, intermediate generation sets, other computer program information, and data (all of which are organized in a fashion or fashions well known in the art) are transmitted in information segments. An information segment can transmit any information that a processor can process. It can transmit compiled machine language code or assembly language code or higher level language programs, all of which are well known in the art. Commands can execute such program information and cause compiling prior to execution." [Emphasis added.] *Id.* at col. 29, lines 54-65. That is, an "instruction" can be a "code," but just as well may be a program. In a broad sense, of course, a computer program may be, practically speaking, a series of "codes" forming "instructions" that are understood by the computer. Ultimately, though, "instruction" appears to mean "any information that a processor can process" to perform an operation.

Finally, it does not appear that the meaning of the word "detecting" is in dispute.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The limitation "detector means * * *" in claims 7, 10, 16, 59 and 63 should not be construed as a means-plus-function limitation under § 112(6). A "detector" is a device for determining the presence of a signal. A "broadcast transmission" is a wireless or over-the-air transmission from one location to many locations. In the context of claims 7, 10, 16, 59 and 63, an "instruction" is information that directs a computer or processor to perform an operation.

4. "processor means"

This limitation appears in claims 7, 10, 59 and 63. Claims 16 and 34 further call for a "first processor means" and "second processor means." The parties agree that those "processor means" limitations, although reciting different functions, should be construed together because they rely on the same "corresponding structure." *See* Joint Summary at 31 n.44. Claim 7 is again selected as representative, and is reproduced in pertinent part below, with the disputed term in boldface:

7. A receiver station system for processing information of a member of a broadcast or cablecast program audience and transferring output to at least one remote data collection station comprising

input means * * *,

first memory means * * *,

detector means for * * *,

processor means operatively connected to said first memory means and said detector means for processing said input information in accordance with said instruction and outputting data that include additional information besides said input information,

second memory means * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[If] § 112(6) is invoked, * * * the recited function of "processor means" in Claim 7 is for "processing said input information in accordance with said instruction and outputting data that include additional information besides said input information." The corresponding structure disclosed in the specification is a processor, computer, or controller (*see, e.g.*, [Harvey III], controller 20 of Figure 2, controller 39 of Figure 2A, signal processor 26 of Figure 2D ['Wall Street Week' example]; controller 39 of Figure 3A, signal processor 200 and microcomputer 205 of Figure 7F ['Exotic Meals of India' example]; and [Harvey I], controller 20 of Figure 1, signal processor 200 and microcomputer 205 of Figure 6C ['Wall

DEFENDANTS' PROPOSED CONSTR.

"Processor means ... for processing said input information ..." should be construed under 35 U.S.C. § 112, ¶ 6. The function "processing said input information in accordance with said instruction and outputting data that include information besides said input information" means "processing 'member information' in accordance with an embedded 'instruction' detected in an over-the-air transmission to generate and output data that contains information in addition to the 'member information.'" [The corresponding structure is] "microcomputer 205 (which is defined as a modified IBM personal computer at '654 patent col. 11, lines 36-61) which has a disk drive containing a file of member information in

Street Week' example], and signal processor 200 of Figure 6D [Julia Childs' example]), and equivalents known at the time the patent issued.

Plaintiffs believe that someone of ordinary skill in the art would accord this functional language its ordinary meaning, such that it would require no definition, and may simply be read to the jury. "Processor Means" is "a digital electronic device that processes information by operating on data according to instructions."

Post-Hearing: ["processor means"] 35 U.S.C. § 112(6) does not apply to "processor means." The term "processor means" should be construed to mean "a digital electronic device that processes information by operating on data according to instructions."

If § 112(6) applies, then the functional recitation is "for processing said input information in accordance with said instruction and outputting data that include additional information besides said input information." The corresponding structures include "a processor or controller, as well as equivalents known at the time the patent issued. (See e.g., [Harvey III], controller 20 of Figure 2, controller 39 of Figure 2A, signal processor 26 of Figure 2D; signal processor 71 of Figure 6A, and computer 73 of Figure 6C; and [Harvey I], controller 20 of Figure 1, signal processor 71 of Figure 3A, computer 73 of Figure 3C, and signal processor 130 of Figure 5.)"

[“second processor means”]. 35 U.S.C. § 112(6) does not apply to "processor means." The term "processor means" should be construed to mean "a digital electronic device that processes information by operating on data according to instructions."

If § 112(6) applies, then the functional recitation is "causing said transmission means to transmit said additional information in response to said instruction." The corresponding structures include "a processor or controller, as well as

the form of a stock portfolio or an audience member's family size, and taste and dietary preferences, TV signal decoder 45, which detects an embedded message in the television program broadcast of "Exotic Meals of India," and transfers the message to controller 39 of decoder 203, and equivalents thereof. However, the specification only discloses general purpose computer hardware for performing the required functions. There is no disclosure of software or specific algorithms for carrying out the recited functions. *** Consequently, there is insufficient written description for the processor means to perform the recited functions, and claim 7 is invalid under 35 U.S.C. § 112, ¶1."

Post-Hearing: ["processor means"] "processor means ... for processing said input information ..." should be construed under 35 U.S.C. § 112 ¶6. Pursuant to 35 U.S.C. § 112 ¶6, "processor means" are "microcomputer 205 (which is defined as a modified IBM personal computer at '654 Patent col. 11, lines 36-61) which has a disk drive containing a file of member information in the form of a stock portfolio or an audience member's family size, and taste and dietary preferences, TV signal decoder 145, which detects an embedded message in the television program broadcast of 'Exotic Meals of India,' and transfers the message to controller 39 of decoder 203, and equivalents thereof."

If § 112(6) applies, Defendants do not believe that the slightly different functions recited in claims 7 and 10 would alter the § 112(6) definition of "Processor Means."

[“second processor means”]. The term "Second Processor Means ... For Causing Said Transmission Means To Transmit ..." should be construed under § 112(6). The functional recitation is "transmission means to transmit said additional information in response to said instruction." The corresponding structure disclosed in the specification is "the combination of

equivalents known at the time the patent issued. (See e.g., [Harvey III], controller 20 of Figure 2, signal processor 26 of Figure 2D, signal processor 200 and microcomputer 205 of Figure 7F; and [Harvey I], controller 20 of Figure 1, signal processor 200 and microcomputer 205 of Figure 6C, and signal processor 200 of Figure 6D), each of which includes a processor-type device (e.g., controller 20) that cause the transmitter (connection 22) to transmit records to the remote data collection station.”

Plaintiffs' Harvey V Chart at 17-18; Defendants' Harvey V Chart at 10-11; Joint Summary at 32-33.

The parties urge that the construction of “processor means” should apply to that term as it appears in claim 10, 16, 34, 59 and 63 (albeit with perhaps a different recited function).

The plaintiffs urge that the term “processor” appears in several of the asserted claims and should be interpreted consistently throughout those claims. According to the plaintiffs, the disputed terms should not be construed under § 112(6) because the term “processor” is a well known standard in the computer arts and conveys adequate structure on its own. Specifically, the plaintiffs contend that “processor” means “a digital electronic device that processes information by operating on data according to instructions.” The plaintiffs urge that the only support the defendants offer for their position that “processor means” must be construed under § 112(6) is that the specification discloses only general purpose hardware and that there is no disclosure of software or specific algorithms for carrying out the recited functions. According to the plaintiffs, persons of ordinary skill in the art would understand how to write software to program a processor to perform the recited functions; thus, there is no need to disclose particular software code or algorithms either to support a structural understanding of processor means or to support its enablement by the specification. The plaintiffs also say that the defendants do not explain the fact that the “processor means” is “operatively connected to” other devices with a connotation of “processor.” According to the plaintiffs, nothing in the specification indicates that anything other than a conventional processor would be necessary to interface with other devices in a system, and that to the contrary, the specification teaches that any conventional processor or computer known in the art would be suitable to this task. The plaintiffs argue in the alternative that if “processor means” is construed under § 112(6), the

specification provides numerous structures that correspond to the various functions recited in the claims using that term, including, in Harvey III, signal processor 200 of Fig. 4, signal processor 200 and microcomputer 205 of Fig. 5, signal processor 71 and computer 73 of Fig. 6A, microcomputer 205 and signal processor 200 of Fig. 7. In Harvey I, the plaintiffs contend, those processors and computers include signal processor 71 of Fig. 3a, computer 73 of Fig. 3b and microcomputer 205 of Fig. 6A. The plaintiffs also contend that the defendants in many instances have not even attempted to identify corresponding structures, but have instead argued that the term is not enabled because no software is disclosed. The plaintiffs say that argument is erroneous and that the defendants should not be allowed to identify corresponding structure where they have not previously provided one. Plaintiffs' Opening *Markman* Brief at 44-49.

The defendants contend that the disputed term invokes § 112(6), and that if § 112(6) applies, the microcomputer 205 is the only disclosed structure linked to performing the claimed functions and specific algorithms or software for performing the recited functions must be disclosed. Because the specification merely states that the microcomputer generates output information without disclosing the algorithm programmed into the microcomputer 205, the defendants say that claim 7 is invalid as indefinite. Defendants' Opening *Markman* Brief at 60-61.

b) Discussion

The parties' dispute regarding whether (1) to construe the term "processor means" under § 112(6) and (2) "processor means" is indefinite, is addressed above in connection with construction of the term "first processor means" called for in Harvey IV. As discussed there, the term "processor means" recites sufficient structure to avoid construction under § 112(6) because "processor" connotes structure to one of ordinary skill in the art, namely, a digital electronic device that processes information by operating on data according to instructions. Also as discussed above, with respect to invalidity, the defendants have not carried their burden to show indefiniteness or lack of enablement on the current record in connection with claim construction. The defendants may, of course, raise that issue with the Court at trial or in dispositive motions.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The limitation "processor means ***" in claims 7, 10, 16, 34, 59 and 63 should not be construed as a means-plus-function limitation under § 112(6). A "processor" is a digital electronic device that processes information by operating on data according to instructions.

5. "transmission means"

This term appears in claims 7, 10, 16, 34, 62 and 66. Again, claim 7 is deemed representative, and is reproduced in pertinent part below, with the disputed term in boldface:

7. A receiver station system for processing information of a member of a broadcast or cablecast program audience and transferring output to at least one remote data collection station comprising

input means for inputting member information,

first memory means for storing said input information,

detector means for detecting in a broadcast transmission at least one instruction,

processor means operatively *** for processing said input information in accordance with said instruction and outputting data that include additional information besides said input information,

second memory means for storing said data, and

transmission means for transmitting said data to said data collection station.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Transmission Means" should be construed under § 112, ¶6. The function performed is "transmitting the data to the remote data collection station." The corresponding structure disclosed in the specification is "a connection to a

DEFENDANTS' PROPOSED CONSTR.

"Transmission means for transmitting said data to said data collection station" is construed under 35 U.S.C. § 112, ¶6. The function "transmitting said data to said data collection system" means "to send the 'output data' generated by

telephone network or a 'data transfer network, and equivalents known as of the issue date of the patent."

"[Remote] Data Collection Station" should be understood accorded to its ordinary meaning, which is "a station located outside of the receiver station that collects data from the receiver station."

Post-Hearing: [no change, except that "[remote] data collection station" is not addressed]

Plaintiffs' Harvey V Chart at 24; Defendants' Harvey V Chart at 14; Joint Summary at 34.

The parties urge that the construction of "transmission means for transmitting said data to said data collection station" should apply to that term as it appears in claim 10, 16, 34, 62 and 66 (albeit with perhaps a different recited function).

According to the JCCS, the parties agree that § 112(6) applies, and that the function is a verbatim recitation of the claim language. However, the parties would then dispute the interpretation of that function, as well as the corresponding structure. JCCS at 9.

The plaintiffs contend that the controller 20 and auto-dialer 24 identified by the defendants as corresponding structure do not transmit information and therefore should not be included as corresponding structure. The plaintiffs also contend that the defendants "completely ignore" the "other data transfer network" disclosed in the specification. Plaintiffs' Opening *Markman* Brief at 36.

The defendants, on the other hand, contend that the corresponding structure should not be limited to "telephone connection 22" because that structure is a phone jack and is incapable of causing a transmission of information by itself. According to the defendants, controller 20 and auto dialer 24 work with telephone connection 22 to cause the transmission of information to a remote data collection station. Defendants' Opening *Markman* Brief at 62.

b) Discussion

This limitation uses the word "means" followed by a recited function, and thus presumptively should be construed as a means-plus-function limitation under § 112(6). The claim does not appear to recite sufficient structure to rebut that presumption. *See, e.g.*, McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS (6th ed. 2003)(defining "transmission" as "1. The process of transferring a signal, message, picture, or other form of intelligence from one location to another location by means of wire lines, radio, light beams, infrared beams, or other communication systems. 2. A message, signal, or other form of intelligence that is being transmitted."). Accordingly, this term should be construed under § 112(6). The recited function is "transmitting said data to said data collection station."

Turning to the specification for a disclosure of "corresponding structure," starting in the section entitled "Summary of the Invention," Harvey *et al.* explain that signal flow, namely, that "signal processing apparatus" includes "one or more devices that can selectively scan transmission frequencies * * *. The input transmissions may be received by means of antennas or from hard-wire connections. The scanners/switches * * * transfer the transmissions to * * * one or more processor/monitors and/or buffer/comparators that organize and transfer the information stream. * * * From the processors and buffers, the signals may be transferred to external equipment * * * [a]nd/or they may be transferred to one or more internal digital recorders that * * * have connections to one or more remote sites for further transmission of the recorded information. The apparatus has means for external communication and an automatic dialer and can contact remote sites and transfer stored information * * *." [Emphasis added.] Harvey V, col. 8, line 62 to col. 9, line 29. Although the "means for external communication" are further detailed later in the specification, at this point Harvey *et al.* describe at least "an automatic dialer" that can perform the recited function.

Harvey *et al.* provide more detail in further describing the "signal processor," as depicted in Fig. 2.

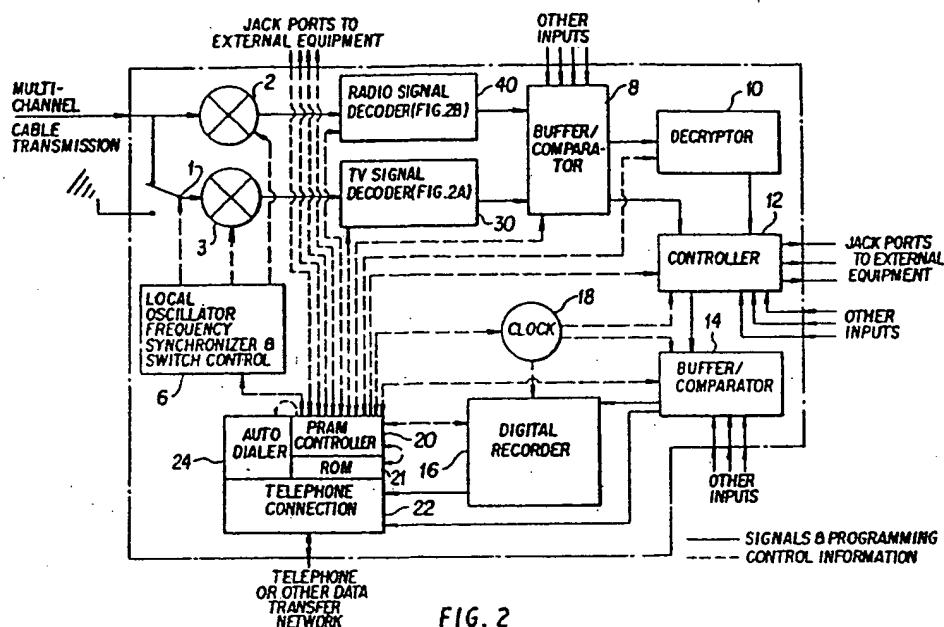


FIG. 2

As noted above, the buffer/comparator 14 may transfer information to the digital recorder 16 for storage. If, however, the digital recorder gets too full, "[b]uffer/comparator, 14, also has means for transferring received information immediately to a remote site or sites via telephone connection, 22, and for communicating a requirement for such transfer to controller, 20, which causes such transfer." Buffer/comparator, 14, operates under control of controller, 20, and has capacity whereby controller, 20, can cause modification of the formats of and information in signal records at buffer/comparator, 14." [Emphasis added.] *Id.* at col. 18, lines 33-41. Thus, it appears that the controller 20 causes transfer of information to a remote station via telephone connection 22. Of course, Fig. 2 also depicts the "automatic dialer [24]" noted above. In Fig. 2, then, the controller, auto dialer and telephone connection together perform the claimed function. *See also id.* at col. 51, lines 11-29 ("In each example, the recorder, 16, of signal processor, 200, has reached a level of fullness where the recording of the next signal record *** will cause the quantity of signal records recorded at recorder, 16, to equal or exceed the particular fullness information of said recorder, 16. Whenever said quantity equals or exceeds said fullness information, recorder, 16, is preprogrammed

to commences [sic] a particular telephone signal record transfer sequence that is fully automatic for which recorder, 16; controller, 20; auto dialer, 24; and telephone connection, 22, are each preprogrammed. Under control of the preprogrammed instructions of said sequence, signal processor, 200, telephones one or more remote billing station computers and/or one or more remote monitor information collection station computers and transfers selected record information to said computers." [Emphasis added.]). Thus, it appears that controller 20, auto dialer 24, and telephone connection 22, are all required for transferring information to a remote station, and should each be considered part of the "corresponding structure."

In another example, Harvey *et al.* explain how a shopping list and street address is transmitted from a subscriber station to a remote supermarket station in the context of purchasing ingredients for the vindaloo recipe demonstrated in the "Exotic Meals of India" cooking show. As discussed previously, during the cooking show, the host will prompt the viewer to enter "TV567" if the vindaloo recipe is desired. When that code is entered, a recipe is generated that conforms to the dietary and taste preferences of the viewer. Also during the show, though, the viewer is given the opportunity to request that a supermarket send the ingredients to the viewer:

Said studio then transmits audio information of the announcer saying,

"your Super Discount manager will see that all the ingredients that you need for your personal 'Exotic Meals of India' fish curry recipe are delivered to you in time for dinner tomorrow. And as a special inducement to enter 'TV568*' on your Widget Signal Generator and Local Input now, your manager promises to include one jar of Patak's"

Id. at col. 280, lines 52-60. That is, the viewer may enter a different code, namely, "TV568*" to order the ingredients for the vindaloo. In any case, Harvey *et al.* explain that the program studio sends a program instruction set that "causes apparatus at each subscriber station where where [sic] TV568* has been inputted to a local input, 225, automatically to telephone a shopping list order." Then, "[a]t the station of FIGS. 7 and 7F, under control of said program instruction set * * *, microcomputer, 205, * * * input[s] particular check-for-entered-TV568*-and-respond instructions to the controller, 20, of signal processor, 200." *Id.* at col. 282, lines 3-15.

Fig. 7 illustrates the local input 225, microcomputer 205 and signal processor 200:

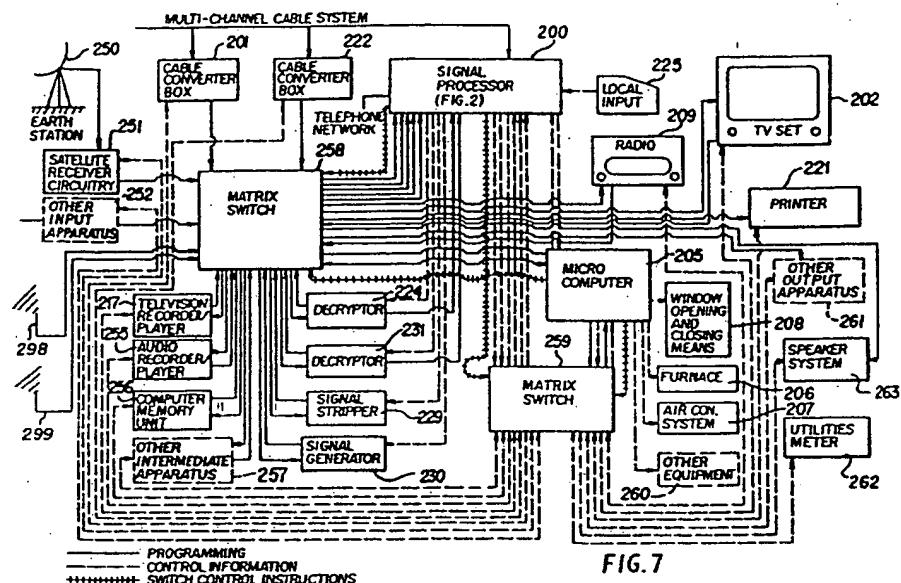


FIG. 7

and Fig. 2 provides further detail of signal processor 200:

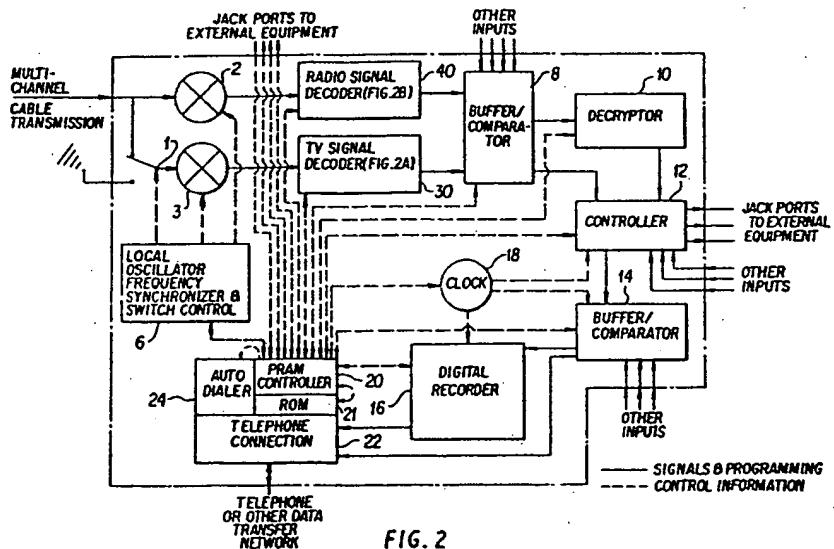


FIG. 2

According to Harvey *et al.*, “[r]eceiving said instructions causes controller, 20, to determine that TV567* information exists at said last-local-input-* memory and to transmit particular TV567*-entered information to microcomputer, 205. Receiving said information causes microcomputer, 205

*** to access said D:DATA_OF.ITS file; to select information from said file of the aforementioned local-automatic-order-taking telephone number of the supermarket chain applicable in the vicinity of the intermediate transmission station of FIG. 6 which is 1(800) 247 -8700; to transmit to controller, 20, particular call-this-number-and-respond-with-'A:SHOPPING.EXE' instructions and information of 1-(800) 247-8700; and to record particular instructions at the recording medium of the disk at the A: disk drive of microcomputer, 205, in a file named 'SHOPPING.EXE'. Receiving said call-this-number-and-respond-with-'A:SHOPPING.EXE' instructions and information of 1-(800) 247-8700 causes controller, 20, in the fashion described above, to cause auto dialer, 24, to dial the telephone number, 1-(800) 247-8700. Automatically, in the fashion described above, controller, 20, establishes telephone communications with a computer of said super market chain at a remote station. Then said call-this-number-and-respond-with-'A:SHOPPING.EXE' instructions cause controller, 20, to cause the instruction 'A:SHOPPING.EXE' to be entered to microcomputer, 205. Entering said instruction causes microcomputer, 205, to execute the instructions of said file, 'SHOPPING.EXE' as a machine language job. Under control of said instructions, microcomputer, 205, transmits via controller, 20, to said computer at a remote station information of the street address of the [subscriber] station *** and *** the shopping list of the subscriber of said station." [Emphasis added.] *Id.* at lines 15-52. From the foregoing, then, it appears that the controller 20, under instructions, causes auto dialer 24 to use the telephone connection 22 to transmit data to a remote station. Thus, it appears that those three elements perform the claimed function, and are thus "corresponding structure." Also, those same elements appear to allow connection to the "other data transfer network" depicted in Fig. 2, as well as the telephone network.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The "transmission means" in claims 7, 10, 16, 34, 62 and 66 should be construed as a means-plus-function limitation under § 112(6). The recited function is "transmitting said data to said data collection station." The structure "corresponding" to that function are controller 20, auto dialer 24 and telephone connector 22.

Under the terms of § 112(6), those limitations should therefore be construed to cover that corresponding structure and equivalents thereof.

6. “control means for receiving operating instructions from said source and selectively reprogramming at least a portion of said system”

This limitation appears in claim 9, which is reproduced below with the disputed limitation in boldface:

9. The system of claim 8 wherein at least some of the operating instructions that control processing of said system can be reprogrammed by a source external to said system including

control means for receiving operating instructions from said source and selectively reprogramming at least a portion of said system.

a) The Parties’ Proposed Constructions and Arguments

PMC/GEMSTAR’S PROPOSED CONSTR.

[If] § 112(6) applies, the recited function is for “receiving operating instructions from said source and selectively reprogramming at least a portion of said system.” The corresponding structure is controller 20 (*see, e.g.*, Figure 2 of [Harvey III] and Figure 1 of [Harvey I]), and equivalents known at the time the patent issued.

One of ordinary skill in the art would understand the term “reprogramming” to mean “to rewrite or revise at least a portion of the operating system.”

[Alternatively,] “control means” [does] not invoke 112(6), but should be construed to mean a “controller.”

Post-Hearing: 35 U.S.C. § 112(6) does not apply to “control means.” The term “control means” should be construed to mean “a controller.”

If § 112(6) applies, then the functional recitation is “for receiving operating instructions from said

DEFENDANTS’ PROPOSED CONSTR.

“Control means for . . . reprogramming” should be construed under 35 U.S.C. § 112, ¶ 6. The function “receiving operating instructions from said source and selectively reprogramming at least a portion of said system” means receiving operating instructions that control processing of the system from a remote source and selectively rewriting or revising at least a portion of the operating instructions of the system. [The corresponding structure includes] a controller 12, controller 20, switch controller 20A, matrix switch 259, and decoder 203.

Assuming, *arguendo*, that § 112, ¶ 6 does not apply, “control means” should be construed to mean a controller: “a processor or processor based device that controls the functions of other components of the system.”

Post-Hearing: [no change]

source and selectively reprogramming at least a portion of said system." The corresponding structures include "a controller, as well as equivalents known at the time the patent issued."

The term "reprogramming" should be construed to mean "rewriting or revising at least a portion of the operating system."

Plaintiffs' Harvey V Chart at 29; Defendants' Harvey V Chart at 18-19; Joint Summary at 34-35.

According to the JCCS, the parties dispute whether § 112(6) applies, but agree that if it does, then the function is "for receiving operating instructions from said source and selectively reprogramming at least a portion of said system." However, the parties would then dispute the interpretation of that function, as well as the corresponding structure. If § 112(6) does not apply, then the parties agree that the term should mean "a controller." JCCS at 9.

The defendants contend that the disputed term should be construed as a means plus function limitation, and that controller 20 alone is insufficient to perform both the "receiving" and "selectively reprogramming" functions recited in the claim. The defendants urge in the alternative that if § 112(6) does not apply, "control means" should be construed to mean a controller, namely, a processor or processor-based device that controls the functions of other components of this system. Defendants' Opening *Markman* Brief at 63-64 n.45; *Markman* Tr. at 501:15-25.

b) Discussion

This limitation uses the word "means" followed by a recited function, and thus presumptively should be construed under § 112(6). The term "control," however, has a defined meaning in the field of computer science (as well as other fields). One source, for example, in defining "control," explains that "[t]he control section of a computer will carry out the instructions in the proper sequence, interpret incoming instructions, and provide the proper output flags." THE ILLUSTRATED DICTIONARY OF MICROCOMPUTERS 71 (3rd ed. 1990). Other sources are in accord. The MODERN DICTIONARY OF ELECTRONICS 150 (7th ed. 1999) defines "control" as: "Also called a control circuit. 1. In a digital computer, those parts that carry out the instructions in proper sequence, interpret each instruction, and apply the proper signals to the arithmetic unit and other parts in accordance with the interpretation. * * * 3. In electronics, a potentiometer or variable resistor." The term "control"

is also defined as “[t]he section of a digital computer that carries out instructions in proper sequence; interprets each coded instruction, and applies the proper signals to the arithmetic unit and other parts in accordance with this interpretation.” MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS 452 (5th ed. 1994). *See also* THE ILLUSTRATED DICTIONARY OF ELECTRONICS 175 (2nd ed. 1981)(defining “control” as “1. An adjustable component – such as a rheostat, potentiometer, variable capacitor, or variable inductor – which allows some quantity to be varied at will” and “control circuit” as “2. In a digital computer, a circuit which handles and interprets instructions and commands the arithmetic and logic unit (and other operating circuits) accordingly”); MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS 478 (6th ed. 2003)(“1. The section of a digital computer that carries out instructions in the proper sequence, interprets each coded instruction, and applies the proper signals to the arithmetic unit and other parts in accordance with this interpretation.”); and AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS (7th ed. 2000) 230 (defining “control,” in this context, as “[u]sually, those parts of a digital computer that effect the carrying out of instructions in proper sequence, the interpretation of each instruction, and the application of the proper signals to the arithmetic unit and other parts in accordance with this interpretation.”). Furthermore, it appears that the structure set out in those definitions appears to be capable of performing, in the context of the “receiver station system” of claim 9,⁴⁹ the claimed functions of “receiving operating instructions from [a source external to said system] and selectively reprogramming at least a portion of said system.”

Nevertheless, whether “control means” should be construed under § 112(6) is a close question. On the one hand, the scope of the claims, in light of the foregoing definitions, are equally understandable whether the term is “control” or “control means” and the parties agree that if the term is construed as a means-plus-function limitation, the “corresponding structure” disclosed in the specification is at least one of the controllers disclosed in the specification. On the other hand, the definitions are largely functional and do not recite any precise structure, but, as noted above, “[a] term need not connote a precise physical structure in order to avoid the ambit of that provision [*i.e.*, § 112(6)].” *CCS Fitness*, 288 F.3d at 1369-70. *See also Personalized Media*, 161 F.3d at 705 (“Even

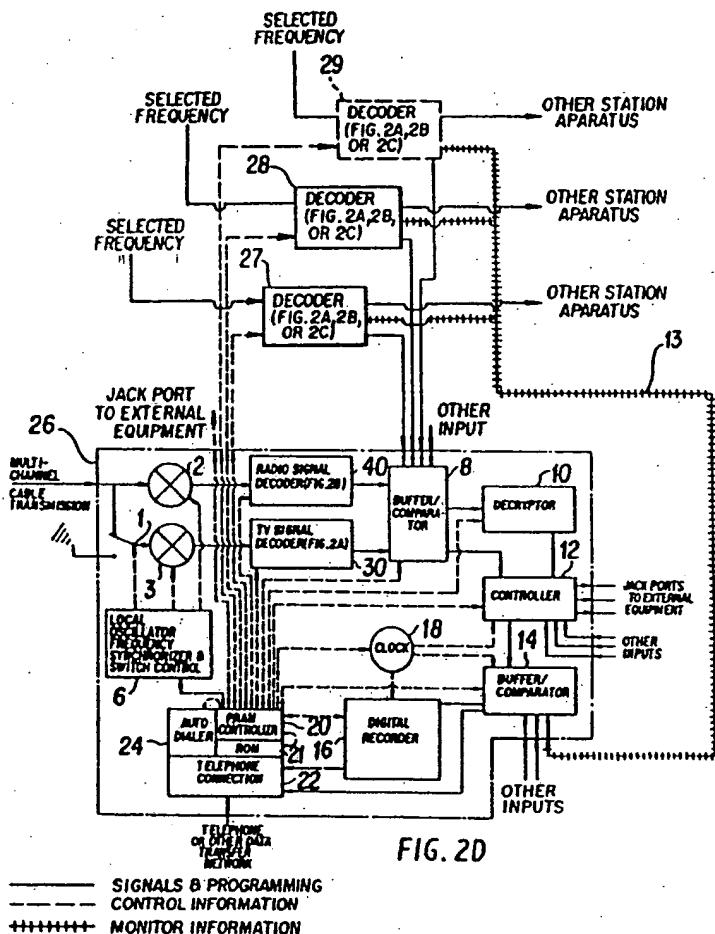
⁴⁹ Claim 9 depends from claim 8, which depends from claim 7, which calls for “a receiver station system *** comprising ***.”

though the term 'detector' does not specifically evoke a particular structure, it does convey to one knowledgeable in the art a variety of structures known as 'detectors.' We therefore conclude that the term 'detector' is a sufficiently definite structural term to preclude the application of § 112, ¶ 6.")

Perhaps significantly, Harvey *et al.* do not appear to use the word "control" in the sense described above, *i.e.*, in a structural sense. Rather, they use that term in a wholly functional sense, which is some indication that they did not intend for the word "control" to be construed as denoting structure. That tips the balance and indicates that the limitation should be construed as a means-plus-function limitation.

The recited function, then, as noted above, is twofold: (1) "receiving operating instructions from said source" and (2) "selectively reprogramming at least a portion of said system." The term "said source," as noted in footnote 49 above, finds antecedent basis in the "source external to said system" called for in the preamble of claim 9. The "said system," of course, is the "receiver station system" of the independent claim from which claim 9 ultimately depends, namely, claim 7. Thus, the functions are (1) receiving operating instructions from a source external to the receiver station system and (2) selectively reprogramming at least a portion of the receiver station system.

The focus thus turns to identifying the structure disclosed in the specification for performing the recited function. The first instance in which the specification discusses programming is in the section entitled "Signal Processor," which details the structure and function of the signal processor depicted in, for example, Fig. 2D.⁵⁰



According to Harvey *et al.*, the signal processor "has a controller device which includes programmable RAM controller, 20; ROM, 21, * * *; an automatic dialing device 24; and a telephone unit, 22. A particular portion of ROM, 21, is erasable programmable ROM (hereinafter, 'EPROM') or other

⁵⁰ According to Harvey *et al.*, the description in that section applies to "the signal processor--26 in FIG. 2; 26 in the signal processor system of FIG. 2D; in the signal processor system, 71, of FIG. 6; 200 in FIG. 7; and elsewhere." Harvey V, col. 16, lines 10-13.

forms of programmable nonvolatile memory. Under control particular preprogrammed instructions at that portion of ROM, 21, that is not erasable, signal processor, 26, has capacity to erase and re-program said EPROM in a fashion that is described more fully below. Controller, 20, has capacity for controlling the operation of all elements of the signal processor and can receive operating information from said elements. Controller, 20, has capacity to turn off any element or elements of controlled subscriber station apparatus, in whole or in part, and erase any or all parts of erasable memory of said controlled apparatus." Harvey V, col. 18, line 61 to col. 19, line 12. From the foregoing, it appears that controller 20 controls every element of the signal processor, and does so according to "preprogrammed instructions" stored in ROM 21.⁵¹ It further appears that controller 20, under those instructions, may reprogram the EPROM part of ROM 21. Thus, controller 20 is "corresponding structure" that performs the second function of "selectively reprogramming at least a portion of said system." From the foregoing, though, it is not clear that controller 20 receives operating instructions from an external source.

⁵¹ There is, of course, another controller shown in Fig. 2D, namely, controller 12. According to Harvey *et al.*, "[c]ontroller, 12, is a standard controller, well known in the art, that has microprocessor and RAM capacities and one or more ports for transmitting information to external apparatus. Said microprocessor capacity of controller, 12, is of a conventional type, well known in the art, but is specifically designed to have particular register memories ***. Controller, 12, may contain read only memory (hereinafter, 'ROM')." *Id.* at col. 17, lines 49-57. Controller 12 is controlled by controller 20, just as are the other elements of the signal processor. See *id.* at col. 18, lines 49-52 ("[B]uffer/comparator, 14, which is preprogrammed with appropriate control instructions and is controlled by controller, 20, similarly to the fashion in which controller, 12 is controlled by controller, 20.").

As seen in Fig. 2D, above, the signal processor contains a number of decoders, and can also accept input from external decoders. Those decoders are described in more detail in the next section entitled "Signal Decoders." Each of those decoders has its own controller. Taking, for example, the TV signal decoder 30, that decoder "detects signal information embedded in an inputted television frequency, renders said information into digital signals that subscriber station apparatus can process, identifies the particular apparatus to which said signals are addressed, and outputs said signals to said apparatus." *Id.* at col. 19, lines 46-51. Television signal decoder 30 is illustrated in more detail in Fig. 2A:

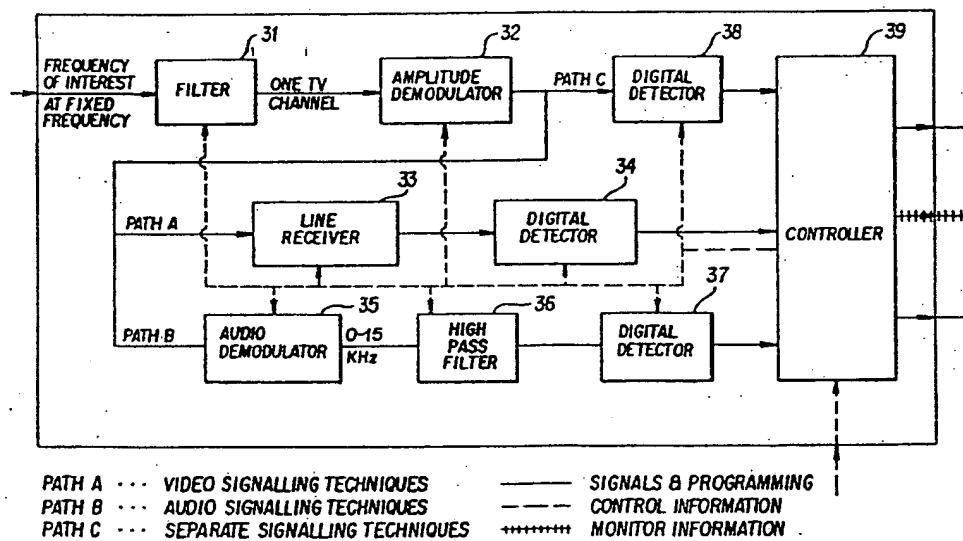


FIG. 2A

Fig. 2A depicts different signal paths. Basically, path A is for the television picture information, path B is for television audio information, and path C is for any other information contained in the "television channel signal."

Path A inputs to a standard line receiver, 33, well known in the art. Said line receiver, 33, receives the information of one or more of the lines normally used to define a television picture. It receives the information only of that portion or portions of the overall video transmission and passes said information to a digital detector, 34, which acts to detect the digital signal information embedded in said information, using standard detection techniques well known in the art, and inputs detected signal information to controller, 39, which is considered in greater detail below.

The second path, designated B, detects signal information embedded in the audio information portion of said television channel signal. Path B inputs to a standard audio demodulator, 35, which uses demodulator techniques, well known in the art, to define the television audio transmission and transfers said audio information to high pass filter, 36. Said filter, 36, defines and transfers to digital detector, 37, the portion of said audio information that is of interest. The digital detector, 37, detects signal information embedded in said audio information and inputs detected signal information to controller, 39.

The third path, designated C, inputs the separately defined transmission to a digital detector, 38, which detects signal information embedded in any other information portion of said television channel signal and inputs detected signal information to controller, 39. Line receiver, 33; high pass filter, 36; detectors, 34, 37, and 38; and controller, 39, all operate under control of controller, 39, and in pre-programmed fashions that may be changed by controller, 39. [Paragraphing and emphasis added.]

Id. at col. 19, line 67 to col. 20, line 29. Thus, all parts of the "television channel signal" ultimately pass through digital detectors that detect embedded signals. All of those embedded signals, e.g., control signals, are eventually input to controller 39.⁵²

As for what controller 39 does with those signals, Harvey *et al.* explain that "[c]ontroller, 39 *** is preprogrammed to receive units of signal information, to assemble said units into signal words that subscriber station apparatus can receive and process, and to transfer said words to said apparatus. In each decoder, the controller, 39 *** receives detected digital information from the relevant detector or detectors, 34, 37, [and] 38 ***. Upon receiving any given instance of signal information, controller, 39 *** is preprogrammed to process said information automatically. Controller, 39, is preprogrammed to discard received duplicate, incomplete, or irrelevant information; to

⁵² According to Harvey *et al.* controller 39 has, as do all the decoder controllers, "buffer, microprocessor, ROM, and RAM capacities. Said buffer capacity of controller, 39 *** includes capacity for receiving, organizing, and storing simultaneous inputs from multiple sources while inputting information, received and stored earlier, to said microprocessor capacity of controller, 39 ***. Said microprocessor capacity of controller, 39 *** is of a conventional type, well known in the art, and is specifically designed to have particular register memories, *** including register capacity for detecting particular end of file signals in inputted information. The ROM capacity of controller, 39 *** contains microprocessor control instructions of a type well known in the art and includes EPROM capacity. Said ROM and/or said EPROM may also contain one or more digital codes capable of identifying its controller, 39 *** uniquely and/or identifying particular subscriber station functions of said controller, 39 ***. The RAM capacity of controller, 39 *** constitutes workspace that the microprocessor of said controller, 39 *** can use for intermediate stages of information processing and may also contain microprocessor control instructions. Capacity exists at said controller, 39 *** for erasing said EPROM, and said RAM and said EPROM are reprogrammable." [Emphasis added.] *Id.* at col. 20, line 63 to col. 21, line 20. Thus, the decoder controllers, such as controller 39, are quite similar in function to the signal processor controller 20.

correct errors in retained received information by means of forward error correction techniques well known in the art; to convert, as may be required, the corrected information, by means of input protocol techniques well known in the art, into digital information that subscriber station apparatus can receive and process; to modify selectively particular corrected and converted information in a predetermined fashion or fashions; to identify in a predetermined fashion or fashions subscriber station apparatus to which said signal information should be transferred; and to transfer said signals to said apparatus. Said controller, 39 * * * has one or more output ports for communicating signal information to said apparatus. Controller, 39 * * * has capacity for identifying more than one apparatus to which any given signal should be transferred and for transferring said signal to all said apparatus. It has capacity for recording particular signal information in particular register memory and for transferring a given signal to one apparatus, modifying it and transferring it to a second apparatus, and modifying it again and transferring it to a third apparatus." [Emphasis added.] *Id.* at col. 21, lines 22-55.

One of those apparatus to which controller 39 transfers signal information is controller 20. Harvey *et al.* explain that controller 39 "controls particular apparatus of its signal decoder and has means for communicating control information to said apparatus. Said controller, 39 * * * also has means for communicating control information with a controller, 20, of a signal processor, 26. (Said communicating means is shown clearly in FIG. 2D * * *.) Via said communicating means and under control of instructions and signals discussed more fully below, said controller, 20, has capacity to cause information at said EPROM to be erased and to reprogram said microprocessor control instructions at said RAM and said EPROM." [Emphasis added.] *Id.* at col. 21, lines 56-68.

Thus, the decoders of the signal processor receive and detect control information signals, *i.e.*, instruction signals, in, for example, a television signal. That television signal, of course, comes from a source "external" to the receiver station. Based on those signals, the controller (*e.g.*, 39) of the decoder may reprogram its own EPROM, as noted above in footnote 52, and/or may pass those signals, either as received or as modified by the controller, to controller 20, which may thereby reprogram its own EPROM. That is, depending on the signals received, the controller of the decoder, and controller 20, may selectively reprogram their own EPROMs – which, of course, are only "a portion of" the receiver station system, as called for in the disputed limitation. Thus, it appears that

not only controller 20, but also the decoder controllers perform the functions of "receiving operating instructions from said source and selectively reprogramming at least a portion of said system.

Defendants further urge, though, that controller 12, switch controller 20A, matrix switch 259 and decoder 203 are part of the "corresponding structure," pointing to column 289, line 40 to column 290, line 44. That part of the specification is found in a section entitled "Preprogramming Receiver Station Operating Systems." In that section, Harvey *et al.* explain that "[s]o-called 'operating systems' are well known in the art and generally comprise the most basic form of processor control instructions. In order to control fundamental aspects of the processing of any given data file *** under control of any given computer program ***, a computer is usually preprogrammed with an operating system that controls such fundamental aspects as, for example, so-called 'input/output' functions.⁵³ *** Many computers are designed to hold operating system instructions at RAM. The IBM PC is one such computer. When power is turned on to an IBM PC, under control of particular instructions that are permanently recorded at ROM and are commonly known as 'ROM BIOS', said PC accesses a disk at a particular disk drive and loads the instructions of a particular pre-recorded file from said disk to particular locations of RAM in a fashion well known in the art that is commonly known as 'booting.'" *Id.* at col. 285, lines 44-68. According to Harvey *et al.*, "[o]ne advantage of recording operating system instructions at memory such as RAM that can be conveniently overwritten relates to expanding system functions. *** Efficient operation of any given computer system of the present invention requires capacity to control the preprogramming of the operating system software of receiver station apparatus. Receiver station apparatus of the present invention is extensive and can vary greatly from station to station." *Id.* at col. 286, line 1-20.

⁵³ According to Harvey *et al.*, "[o]ne such system that is commonly known as 'PC-DOS' or 'MS-DOS' is an operating system of the IBM personal computer, commonly known as the 'IBM PC.' (PC-DOS or MS-DOS is described in Disk Operating System of the IBM Personal Computer Computer Language Series.)" *Id.* at col. 285, lines 53-58.

Harvey *et al.* then refer to Fig. 7, which describes "a block diagram of signal processing apparatus and methods at an ultimate receiver station." *Id.* at col. 10, line 54-55.

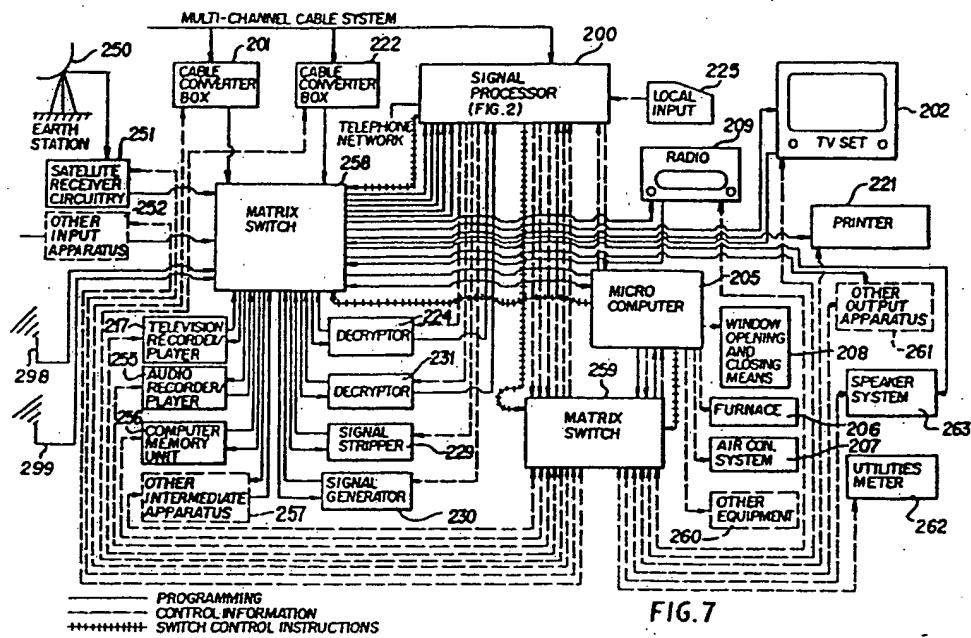


FIG. 7

According to Harvey *et al.*, "apparatus that requires preprogramming at the station of FIG. 7, includes microcomputer, 205; controllers, 12 and 20, of signal processor, 200 [depicted above in Fig. 2D]; the RAMs associated with the processors, 39B and 39D, and with the control processor, 39], of

decoder, 30,⁵⁴ of signal processor, 200; and the RAMs associated with the processors, 39B and 39D, and with the control processor, 39J, of other decoders of said station such as decoders, 203 and 282. Other ultimate receiver stations can include less apparatus, more apparatus, or simply different apparatus. (For example, one receiver station may have the decoder, 203/SPAM controller, 205C, apparatus of example #1 while another station has the preferred decoder, 203, apparatus of example #3.)" *Id.* at col. 286, lines 19-34. Thus, it appears that it is the memory associated with the various controllers that is reprogrammed. It also appears that the controllers are effectively processors ("control processors"), which, of course, is consistent with the structural definition for "control" discussed above.

Furthermore, according to Harvey *et al.*, one "objective of the present invention is flexibility and convenience in reprogramming operating systems in order to expand system functions. The present invention provides means and methods whereby one remote system master control station can preprogram all intermediate transmission stations and ultimate receiver station in a given geographical area (such as, for example, the continental United States of America) by transmitting a given sequence of SPAM messages that contain operating system instructions which sequence is received at and processed by all receiver stations and from which selected stations select selected messages that contain instructions of specific relevance." [Emphasis added.] *Id.* at lines 51-64.

⁵⁴ Fig. 3A depicts the processors 39B, 39D and 39J of decoder controller 39 (see footnote 52, above, for a description):

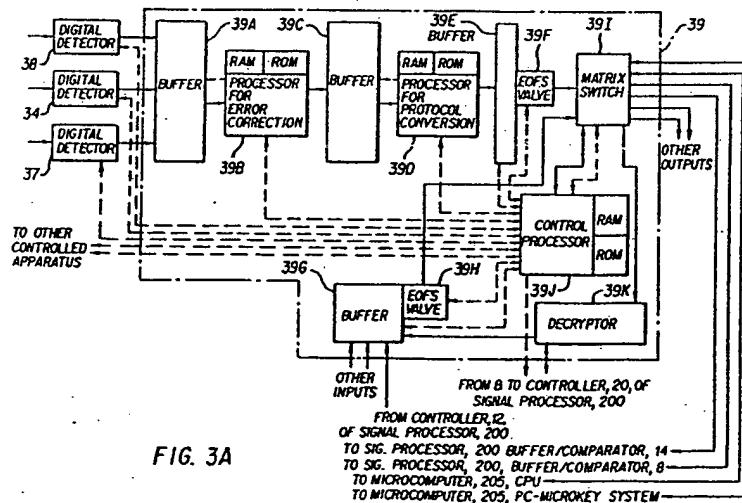


FIG. 3A

Harvey *et al.* describe how such "preprogramming" occurs. That description is rather lengthy, but essentially instruction signals are embedded in, say, a television signal, extracted at the receiver station system, and processed in a manner that effects "reprogramming." More particularly, a given signal may be only pertinent to IBM PC-equipped stations, as opposed to, say, Apple II-equipped stations. Turning generally to that section that the defendants rely on, the external source transmits a SPAM message that contains "[1] meter-monitor information of an IBM PC microcomputer, 205, apparatus version and [2] an information segment that contains SPAM message information of IBM PC microcomputer operating system instructions [*i.e.*, 'operating instructions'].⁵⁵" Keeping the SPAM message and the "contained SPAM message" in mind, Harvey *et al.* explain:

Receiving said [SPAM] message causes apparatus of the station of FIGS. 7 and 8 to determine that the microcomputer, 205, of said station is an IBM PC microcomputer and to input the contained SPAM message information of said *** SPAM message to decoder, 203. [Note: Fig. 8 "is a block diagram of selected apparatus of the station of FIG. 7 with a station specific EPROM, 20B, installed," and is reproduced below for reference:

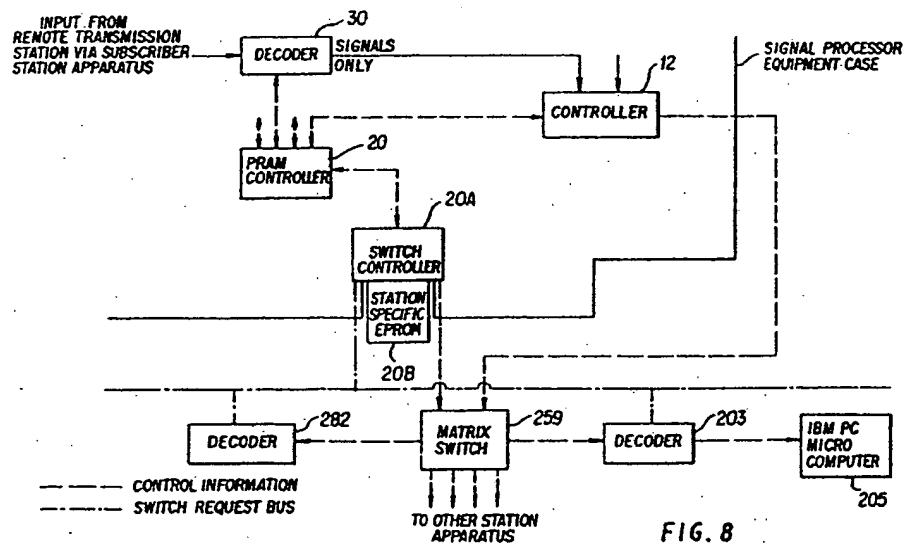


FIG. 8

The "station specific EPROM, 20B" "identifies specific preprogrammable apparatus of the station of Fig. 7."⁵⁵ *Id.* at col. 287, lines 35-37.] Automatically, de-

⁵⁵ Harvey *et al.* explain that "[s]tation specific EPROM, 20B, is reprogrammed whenever apparatus is installed at or removed from the station of FIGS. 7 and 8 and contains not only information that identifies specific preprogrammable apparatus of said station but also switch control instructions that identify which particular apparatus input to the specific inputs of matrix switch, 259; that identify which particular outputs of said matrix switch, 259, output to which particular

coder, 30, detects said message and transfers all information of said message to controller, 12. Automatically, controller, 12, loads at its SPAM-input-signal memory the command information of said message *** and inputs to controller, 20, said operating-instructions-received-for-specific-apparatus instruction ***. Receiving said instruction and information causes controller, 20, to transfer said instruction and information to switch controller, 20A, causing switch controller, 20A, to determine, in a predetermined fashion, that said meter-monitor information that identifies a specific preprogrammable apparatus version matches information that is preprogrammed at station specific EPROM, 20B, and that identifies specific preprogrammable apparatus of the station of FIGS. 7 and 8--in other words, to determine that an IBM PC is the microcomputer, 205, of said station. So determining causes switch controller, 20A, in a predetermined fashion, to cause matrix switch, 259, to configure its switches so as to transfer information inputted from controller, 12, to decoder, 203, then causes switch controller, 20A, to transmit a particular preprogrammed transfer-operating-system-message instruction to controller, 20, causing controller, 20, to transmit said instruction to controller, 12. Receiving said instruction causes controller, 12, to transmit to matrix switch, 259, all information of said *** SPAM message after said command and padding bit information recorded at said SPAM-input-signal register memory. In so doing, controller, 12, transfers the information segment and end of file signal of said second message to matrix switch, 259, and causes said switch, 259, to input said information to decoder, 203. *** *

Said information that is inputted to decoder, 203, is the contained SPAM message of said *** SPAM message, and having been separated from the command information and immediately following padding bits of said *** SPAM message, said contained SPAM message is a SPAM message in its own right. Said contained message consists of a "01" header; execution segment information that is addressed to URS decoders, 203, of IBM PCs and that causes said decoders, 203, each to invoke its ROM instructions for entering operating system instructions into its microcomputer, 205; appropriate meter-monitor information that may include particular meter instructions; padding bits as required; and an information segment that contains the SPAM operating system instructions of an IBM PC microcomputer. Immediately following the last bit of said information segment is the end of file signal of said *** SPAM message which is also the end of file signal of said contained SPAM message. [Emphasis added.]

station apparatus; and that control switch controller, 20A, in causing matrix switch, 259, to configure its switches to transfer information from one given station apparatus to another. Station specific EPROM, 20B, is mounted in a cartridge and inserted manually into switch controller, 20A, in a fashion well known in the art, at a port in the equipment case of signal processor, 200. Station specific EPROM, 20B, is also preprogrammed with information of a specific operating system master control frequency of the station of FIG. 7. (FIG. 8 also illustrates other selected apparatus and programming and control information transmission means that process SPAM information in the course of the preprogramming of operating system instructions at selected apparatus of the station of FIG. 7.)" *Id.* at col. 287, lines 37-61.

Id. at col. 289, line 29 to col. 290, line 27. Tracking the paths of the SPAM message and “contained SPAM message” through the routes of Fig. 8, it becomes clear that switch controller 20A and matrix switch 259 are simply signal routers that enable the controllers to do their job, but are not themselves clearly linked to the function of “reprogramming.” Harvey *et al.* continue:

Receiving said contained SPAM message causes decoder, 203, to cause the operating system instructions of said message to be recorded on the recording medium of a disk at a particular disk drive of microcomputer, 205, and to cause microcomputer, 205, to boot the operating system so recorded. Automatically, decoder, 203, executes the controlled functions of its ROM instructions for entering operating system instructions into microcomputer, 205. Automatically, decoder, 205, interrupts the operation of the CPU of microcomputer, 205, and inputs particular instructions to said CPU that cause microcomputer, 205, to load received information in a file at RAM. Automatically, decoder, 203, commences inputting the information segment information of said contained message to microcomputer, 205, and microcomputer, 205, records said inputted information in said file at RAM. Then receiving said end of file signal causes decoder, 203, to cease inputting information segment information to microcomputer, 205, and to cause microcomputer, 205, to record the information of said file in a designated file such as “COMMAND.COM” on a disk at a designated disk drive such as drive A:. In so doing, receiving said message causes the operating system instructions in said message to be recorded at the particular disk drive and in the particular file from which the ROM BIOS of said microcomputer, 205, is preprogrammed to load the operating system of said microcomputer, 205, at boot time. When microcomputer, 205, completes recording the information of said file at said disk drive, microcomputer, 205, inputs particular preprogrammed file-recorded information to decoder, 203. Receiving said file-recorded information causes decoder, 203, under control of said ROM instructions for entering operating system instructions, to turn power to said microcomputer, 205, off then on (which decoder, 205, has capacity to do). Automatically, microcomputer, 205, under control of the instructions of said ROM BIOS boots the instructions of the disk drive file A:COMMAND.COM in a fashion well known in the art, loads the operating system instructions of said file (which are the operating system instructions of said contained SPAM message) at operating system memory, and commences to function at so-called “operating system level” under control of said instructions. [Emphasis added.]

Id. at col. 290, line 38 to col. 291, line 14. That is, the “operating instruction” embedded in the transmitted television signal is routed to decoder 203, which passes it to the microcomputer 205 for recording on a floppy disk. The decoder 203 – specifically, the controller at decoder 203 – then causes the microprocessor 205 to reboot from the floppy disk, and load those new “operating in-

structions" into the microprocessor's memory. That is, it does not appear that the microprocessor reprograms itself, but is reprogrammed under direction of the controller of the decoder. In other words, the controller of the decoder "receiv[es] operating instructions from [the external television channel signal originating studio] source" and "selectively," *e.g.*, for the IBM PC as opposed to the Apple II, "reprogram[s]," *i.e.*, loads a new operating system in the microprocessor, "at least a portion of said system," *i.e.*, the microprocessor is such a "portion." Thus, in that embodiment, the controller of decoder – in conjunction, of course, with the other controllers – performs the recited function.

All told, it appears that the "corresponding structure" is simply a controller, whether of the signal processor *per se*, or a decoder, or wherever. Those controllers, according to the specification, cannot only reprogram their own EPROMs, but also other parts of the receiver station system, *e.g.*, the microprocessor.

Based on the parties' respective proposed constructions, there does not appear to be any dispute over what the term "reprogramming" means, and both parties essentially agree that term means "rewriting or revising at least a portion of the operating system." The special master agrees.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The "control means" in claim 9 should be construed as a means-plus-function limitation under § 112(6). The recited functions are "receiving operating instructions from said source" and "selectively reprogramming at least a portion of said system." The word "reprogramming" means rewriting or revising at least a portion of the operating system. The structure "corresponding" to those functions is a controller.

Under the terms of § 112(6), those limitations should therefore be construed to cover that corresponding structure and equivalents thereof.

7. "recorder means"

This limitation appears in claims 34, 59 and 63. Claim 34 is selected as representative, and is reproduced below with the disputed limitation in boldface:

34. A receiver station system for processing, recording, and transferring information of a member of a broadcast program audience to at least one remote data collection station comprising

memory means for storing first information of said member,

first processor means for processing said first information and assembling output records that include additional information besides said first information,

recorder means for storing said output records,

transmission means for transmitting at least some output of said recorder to said data collection station,

detector means for detecting in a broadcast transmission at least one instruction, and

second processor means operatively connected to said transmission means and said detector means for causing said transmission means to transmit said output in response to said instruction.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Recorder Means" should be construed under 35 U.S.C. § 112, ¶6. The function performed is "storing [the] output records." The corresponding structure disclosed in the specification is "a memory storage device of standard design capable of recording digital information, such as a digital recorder or buffer memory, as well as equivalents that were known when the patent issued."

"[R]ecorder means for storing said output records" is construed under 35 U.S.C. § 112, ¶ 6. [The corresponding structure is] internal digital recorder 16 and equivalents thereof. The function is "storing said output records," and this means "placing or leaving 'output records' in a location for preservation or later use or disposal."

Post-Hearing: [no change]

Post-Hearing: [no change]

Plaintiffs' Harvey V Chart at 37; Defendants' Harvey V Chart at 27-28; Joint Summary at 35.

The parties urge that the construction of "recorder means" should apply to that term as it appears in claims 59 and 63 (albeit with perhaps a different recited function).

According to the defendants "digital recorder 16" is the only structure disclosed in the specification that is clearly linked with the function of storing the claimed output records created by the processor means. Defendants' Opening *Markman* Brief at 64.

The plaintiffs do not address this term in their *Markman* briefs.

b) Discussion

This term uses the word "means" followed by a recited function, and thus presumptively should be interpreted as a means-plus-function limitation under § 112(6) – as the parties agree. It is debatable whether "recorder" connotes sufficient structure to avoid the ambit of § 112(6). *See, e.g.*, AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS 936-7 (7th ed. 2000)(defining "recorder" in the field of analog computers as "[a] device that makes a permanent record, usually graphic, of varying signals. *Synonym:* strip-chart recorder," and in the context of facsimiles as "[t]hat part of the facsimile receiver which performs the final conversion of electric picture signal to an image of the subject copy on the record medium"). *See also id.* at 937 (defining "recording" as "(1) (facsimile) The process of converting the electrical signal to an image on the record medium. *** (2) The process of storing information on some storage medium for later retrieval."). Under the circumstances, the special master accepts the parties' agreement that the term should be construed under § 112(6).

Accordingly, the recited function in claim 34 is "storing said output records," and in claims 59 and 63 is "storing said output records on a memory medium."

Turning to the "corresponding structure," in the context of the signal processor depicted in Fig. 2, for example:

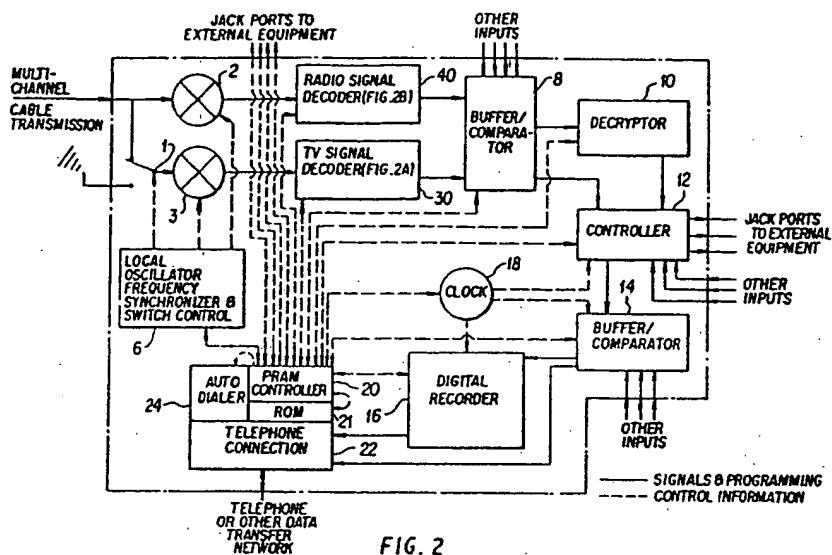


FIG. 2

Harvey *et al.* explain that "[d]igital recorder, 16, is a memory storage element of standard design that receives information from buffer/comparator, 14, and records said information in a predetermined fashion." Harvey V, col. 18, line 53-56. According to Harvey *et al.*, [b]uffer/comparator, 14, receives signal information that is meter information and/or monitor information from controller, 12, and from other inputs; organizes said received information into meter records and/or monitor records (called, in aggregate, hereinafter, 'signal records') in a predetermined fashion or fashions; and transmits said signal records to a digital recorder, 16, and/or to one or more remote sites. With respect to particular simple or frequently repeated instances of signal information, buffer/comparator, 8, has capacity to determine, in a predetermined fashion or fashions, what received information should be recorded, how it should be recorded, and when it should be transmitted to recorder, 16, and/or to said remote sites and to initiate or modify signal records and to discard unnecessary information accordingly." *Id.* at lines 11-26. That is, the buffer/comparator 14 assembles "output records" from various inputs, and can send that information either to the digital recorder 16 or to a remote location for storage. The specification does not appear to describe the "remote site" as performing the recited function. In any case, the digital recorder is "clearly linked" to the recited function.

It is not at all clear, though, that a "buffer memory" performs the recited function, as the plaintiffs urge. The buffer/comparator appears to be a temporary holding/processing element for assembling the output records, rather than a place at which those records are stored. That is, the buffer/comparators are not disclosed as performing the function of "storing said output records" even though a buffer may hold information for a brief period of time. Accordingly, the plaintiffs' proposed construction must be rejected.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The "recorder means" in claims 34, 59 and 63 should be construed as a means-plus-function limitation under § 112(6). The recited function in claim 34 is "storing said output records," and in claims 59 and 63 is "storing said output records on a memory medium." The structure disclosed in the specification "corresponding" to those functions is digital recorder 16.

Under the terms of § 112(6), those limitations should therefore be construed to cover that corresponding structure and equivalents thereof.

8. "means for defining * * *"

This limitation appears in claims 61 and 65, both of which are reproduced below for reference, with the disputed term in boldface:

61. The system of claim 59 wherein said recorder means holds records associated with more than one instance of input member information and said station has **means for defining the locations in which said recorder means holds said records.**

65. The system of claim 63 wherein said recorder means holds records associated with more than one instance of input member information and said station has **means for defining the locations in which said memory holds said data.**

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

DEFENDANTS' PROPOSED CONSTR.

"Means for Defining" should be construed un- "Means for defining the locations in which said

der 35 U.S.C. § 112, ¶ 6. The function performed is “defining the locations in which the recorder means holds the records.” The corresponding structures disclosed in the specification are “a controller which identifies or determines the locations at which the output records are held by the recorder means, or the recorder means itself which has the ability to identify or determine the locations at which the output records are held, as well as equivalents that were known when the patent issued.”

Post-Hearing: [no change]

recorder means holds said records” is construed under 35 U.S.C. § 112, ¶ 6. The function “defining the locations in which said recorder means holds said records” should be given its ordinary meaning. The specification does not link any structure to the function of “defining the location . . .” Indeed, the specification only generically states that information is recorded in digital recorder 16 “in a predetermined fashion.” Digital recorder, 16, is a memory storage element of standard design that receives information from buffer/comparator, 14, and records said information in a predetermined fashion. Because the disclosure in the specification does not provide any clear guidance for the meaning of this limitation, claim 61 is invalid under 35 U.S.C. § 112, ¶ 1.

Post-Hearing: [no change]

Plaintiffs’ Harvey V Chart at 47-48; Defendants’ Harvey V Chart at 32-33; Joint Summary at 36.

The parties urge that the construction of “memory means for storing said input information” should apply to that term as it appears in claim 65 (albeit with perhaps a different recited function).

According to the defendants, the specification does not link any structure to the “defining the location” function, but only generically states that information is recorded in digital recorder 16 “in a pre-determined fashion.” In particular, the defendants contend, the specification fails to identify any structure that defines where the digital recorder 16 is to hold records, and that digital recorder 16 in and of itself does not have the capability to identify or determine the locations at which output records are held. Thus, the defendants say, claims 61 and 65 are invalid as indefinite under 35 U.S.C. § 112(2). Defendants’ Opening *Markman* Brief at 65-66.

b) Discussion

This limitation uses the word “means” followed by a recited function, and thus presumptively should be construed as a means-plus-function limitation under § 112(6). There is no structure recited in the claim for performing the recited function, and so the presumption has not been rebut-

ted. Accordingly, this limitation should be construed under § 112(6). In claim 61, the recited function is "defining the locations in which said recorder means holds said records," and in claim 65 is "defining the locations in which said memory holds said data."

Claim 61, of course, depends from claim 59, which calls for the "recorder means" construed above. "Recorder means" was construed there under § 112(6) and the "corresponding structure" for that "means" is "digital recorder 16." Claim 61 thus requires "corresponding structure" disclosed in the specification that is clearly linked to the function of "defining the locations in which said [digital recorder 16] holds said records." As discussed above,

Buffer/comparator, 14, receives signal information that is meter information and/or monitor information from controller, 12, and from other inputs; organizes said received information into meter records and/or monitor records (called, in aggregate, hereinafter, "signal records") in a predetermined fashion or fashions; and transmits said signal records to a digital recorder, 16, and/or to one or more remote sites. With respect to particular simple or frequently repeated instances of signal information, buffer/comparator, 8, has capacity to determine, in a predetermined fashion or fashions, what received information should be recorded, how it should be recorded, and when it should be transmitted to recorder, 16, and/or to said remote sites and to initiate or modify signal records and to discard unnecessary information accordingly. [Emphasis added.]

Harvey V, col. 18, lines 11-25. In Fig. 2, then:

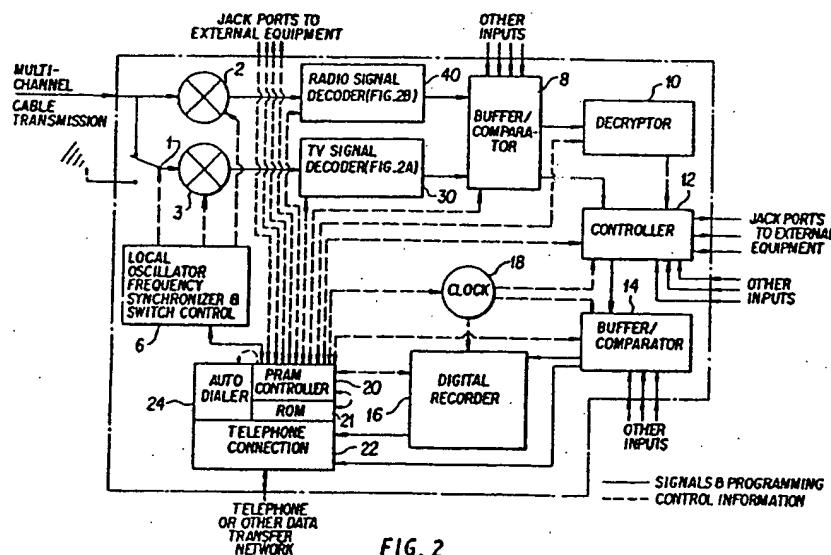


FIG. 2

buffer/comparator 14 sends output records to the digital recorder. However, the foregoing indicates, at least with respect to some information, that buffer/comparator 8 determines what output records should be recorded, "how it should be recorded, and when it should be transmitted" to the digital recorder 16. Nevertheless, the specification does not clearly link buffer/comparator 8 to the stated function of "defining the locations in which said recorder holds said records."

Digital recorder 16 is disclosed as recording data "in a predetermined fashion," which may involve defining the locations in which the recorder holds the records. *See id.* at lines 53-56. However, once again, there is no clear link in the specification between the stated function and any particular structure. Indeed, the specification does not discuss this function at all, at least not in so many words. *See Northrop Grumman Corp. v. Intel Corp.*, 325 F.3d 1346, 1352 (Fed. Cir. 2003) ("Under 112, paragraph 6, structure disclosed in the specification is 'corresponding' structure 'only if the specification or the prosecution history clearly links or associates that structure to the function recited in the claim.'"). Although the plaintiffs also point to controller 12, there is no disclosed link between controller 12 and the stated function either.

Thus, the defendants urge that the claim is indefinite. The defendants' support for its indefiniteness arguments consists of its expert, Dr. Rhyne, pointing out that the specification does not explicitly state that the foregoing structures direct where the information is to be stored in the digital recorder:

80. Here I disagree with Dr. Bovik's opinion (see paragraph 419 of his declaration) that the [Harvey V] specification clearly links or associates a controller with performing the function of "defining the locations in which the recorder means holds said records." To support that opinion, Dr. Bovik cites a passage in [Harvey III] that corresponds to column 18, lines 53 to 60 of [Harvey V]. This passage reads:

Digital recorder, 16, is a memory storage element of standard design that receives information from buffer/comparator, 14, and records said information in a predetermined fashion. In a predetermined fashion, recorder, 16, can determine how full it is and transmit this information to controller, 20. Recorder, 16, may inform controller, 20, automatically when it reaches a certain level of fullness.

81. This excerpt simply explains that the digital recorder may record records "in a predetermined fashion" and that a level of fullness may be communicated to

the controller 20. Nothing in this passage, however, states that the controller (or the digital recorder itself) instructs *where*, i.e., the locations at which digital recorder 16 should store a particular record.

82. As set forth in my declaration, I have reviewed the [Harvey V] specification, finding *no* structure that is clearly linked or associated with performing the function of the "means for defining" limitation. ***

84. I also disagree with Dr. Bovik's opinion that digital recorder 16 by itself has the ability to identify or determine the locations at which the output records are held. While the [Harvey V] specification is replete with references to digital recorder 16, nowhere does that specification explain that the digital recorder has that ability.

Defendants' Opening *Markman* Brief, Exh. 26: Rebuttal Decl. of Dr. Rhyne at ¶¶ 80-83. See also *id.* at Exh. 25: Decl. of Dr. Rhyne at ¶¶ 98-106, which basically says the above.

Section 112, paragraph 2, requires that the specification conclude with one or more claims "particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." The Federal Circuit has held that for a claim to comply with § 112(2), "it must satisfy two requirements: first, it must set forth what 'the applicant regards as his invention,' and second, it must do so with sufficient particularity and distinctness, i.e., the claim must be sufficiently 'definite.'" *Solomon v. Kimberly-Clark Corp.*, 216 F.3d 1372, 1377 (Fed. Cir. 2000). The second requirement, in essence, is a requirement for precision in claiming. In the context of § 112(6), the Federal Circuit has instructed that there is a "duty of a patentee to clearly link or associate structure with the claimed function," and such "is the *quid pro quo* for allowing the patentee to express the claim in terms of function under section 112, paragraph 6." *Med. Instrumentation*, 344 F.3d at 1211-12. The court has held that (1) whether sufficient structure was disclosed in the specification should be based on the understanding of one skilled in the art, see *Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1382 (Fed. Cir. 1999); *S3*, 259 F.3d at 1371, and (2) asserting that a means-plus-function limitation lacks structural support in the specification requires a clear and convincing level of proof. See *Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1376-80 (Fed. Cir. 2001) ("Whether or not the specification adequately sets forth structure corresponding to the claimed function necessitates consideration of that disclosure from the viewpoint of one skilled in the art. *** Moreover, failure to disclose adequate structure corresponding to the recited function in accordance with 35 U.S.C. § 112, para-

graph 1, results in the claim being of indefinite scope, and thus invalid, under 35 U.S.C. § 112, paragraph 2. *** The specification must be read as a whole to determine the structure capable of performing the claimed function. ***"). See also *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1332 (Fed. Cir. 2003)(explaining that statements from experts cannot be used to "rewrite the patent's specification" to create a clear link where the language in the specification provides none); *Medtronic*, 248 F.3d at 1313 (finding particular structures not to be "corresponding structures" because "one skilled in the art would not perceive any clear link or association between these structures and the [recited] function of connecting adjacent elements together"). Here, Dr. Rhyne asserts that "one of ordinary skill in the art would not be able to identify any structure recited in [Harvey V] that is clearly linked or associated to the function of defining the locations in which said recorder means holds said recorders." Defendants' Opening *Markman* Brief, Exh. 25: Decl. of Dr. Rhyne at ¶ 106. Based on that, and in view of the specification's lack of an express "link" between either the digital recorder 16 or buffer/comparator 8 and the recited function, there is, at least initially, a question, therefore, whether claim 61, and also claim 65, meet the requirements of § 112(2). See *Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, 296 F.3d 1106, 1114 (Fed. Cir. 2002)(if an applicant fails to provide an adequate disclosure of "corresponding structure" to a means-plus-function limitation, the claim is invalid under § 112(2)). But see *Creo Products, Inc. v. Presstek, Inc.*, 305 F.3d 1337, 1347 (Fed. Cir. 2002)(expanding its prior holdings in *Budde*, *S3* and *Atmel* that the knowledge of one of ordinary skill in the art may be relied upon to provide an understanding of what "structure" was disclosed. Although the specification is viewed through the eyes of one of ordinary skill in the art, nevertheless some structure must be disclosed: "Under our case law, interpreting § 112, ¶ 6, knowledge of one skilled in the art can be called upon to flesh out a particular structural reference in the specification for the purpose of satisfying the statutory requirement of definiteness. *** Thus, in addressing the question whether a means-plus-function limitation satisfies the definiteness requirement, we focus our inquiry on whether one skilled in the art would have understood that the specification of each patent disclosed structure capable of performing the function recited in the claim limitation.").

Nevertheless, Dr. Rhyne does not contend that one of ordinary skill in the art would be unable to determine the scope of the claims in light of the specification. See *Personalized Media*, 161 F.3d at 705. In other words, claims 61 and 65 call for, and Dr. Rhyne does not dispute that the specification discloses, a structure or structures that are capable of performing the respective recited

functions. Dr. Rhyne's opinion is that there is no "clear link" between one or more of those structures and the recited function. Thus, there appears to be no dispute that the specification discloses structure capable of performing the claimed function. And, as noted above, the disclosure must be evaluated from the perspective of one of ordinary skill in the art. Further, the issue here is solely claim construction. The defendants remain free to raise invalidity under § 112(2) at trial or through dispositive motions.

As it turns out, Dr. Rhyne suggests that buffer/comparator 8 may perform the stated function: "The closest structure is the buffer/comparator 8." Defendants' Opening *Markman* Brief, Exh. 25: Decl. of Dr. Rhyne at ¶ 104. On the other hand, Dr. Bovik, the plaintiffs' expert, asserts that the digital recorder is the "corresponding structure," or, alternatively, the controller 20. *See* Plaintiffs' Opening *Markman* Brief, Exh. 3: Decl. of Dr. Bovik at ¶¶ 419-422. As for the controller 20 as the "corresponding structure," controller 20 is disclosed as being able to control the format and information of the output records at the buffer/comparator 14, *see Harvey V*, col. 18, lines 37-41, and how full the digital recorder 16 may get, *see id.* at lines 56-60, but the disclosure does not otherwise address the function of defining the location in the digital recorder in which the records are to be stored.

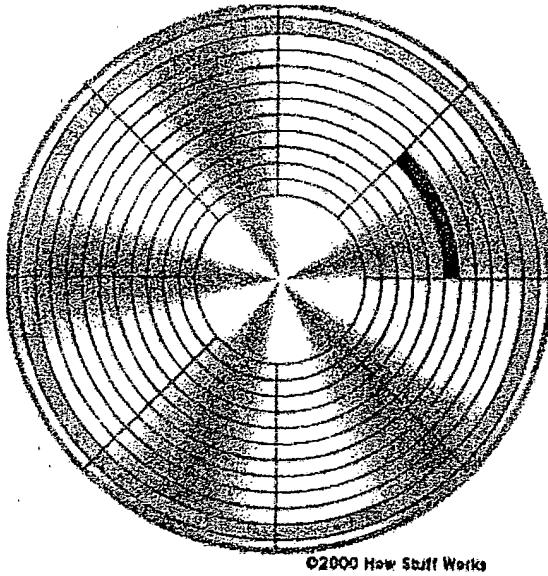
In any case, accurately identifying the "corresponding structure" on the present record is difficult. Although the buffer/comparator 8 controls "how" the information should be recorded, it seems that the digital recorder 16 itself may be the best candidate for "corresponding structure." According to *Harvey et al.*, the digital recorder is a "memory storage element of standard design," *see id.* at lines 53-54, such as, say a hard disk that was then available. The record, unfortunately, does not contain any description of such "standard design." Once again, however, the task is to determine how one of ordinary skill in the art would view the disclosure. According to the website HowStuffWorks,⁵⁶ hard disks have their own controlling electronics capable of defining the location of where it stores data: "The electronics control the read/write mechanism and the motor that spins the platters [the smooth disk on which information is stored]. The electronics also assemble the

⁵⁶ <http://computer.howstuffworks.com/hard-disk.htm> (last visited June 5, 2004).

magnetic domains on the drive into bytes (reading) and turn bytes into magnetic domains (writing).”

Id.

According to that website, “Data is stored on the surface of a platter in sectors and tracks. Tracks are concentric circles, and sectors are pie-shaped wedges on a track, like this:



That website explains the “predetermined fashion” (to use Harvey *et al*’s language) in which the hard drive may operate: “[a] typical track is shown in yellow; a typical sector is shown in blue. A sector contains a fixed number of bytes -- for example, 256 or 512. Either at the drive or the operating system level, sectors are often grouped together into clusters. The process of low-level formatting a drive establishes the tracks and sectors on the platter. The starting and ending points of each sector are written onto the platter. This process prepares the drive to hold blocks of bytes. High-level formatting then writes the file-storage structures, like the file-allocation table, into the sectors. This process prepares the drive to hold files.” *Id.* Other references contain similar descriptions. See, e.g., J. Prosise, *DOS 5 Techniques and Utilities*, ch. 4 “Disks and Disk Management” (Ziff Davis Press 1991). The parties will, of course, have an opportunity to comment on this report and recommendation. At the present, though, it would seem that a digital recorder of “standard design” would have been understood by one of ordinary skill in the art as, at least in a broad sense, performing the function of “defining the location in which said recorder holds said records.”

Turning more particularly to the recited function of claim 65, namely, "defining the locations in which said memory holds said data," it appears that the foregoing applies with equal force to the "corresponding function" for that function, as well. Again, claim 65 depends from claim 63, in which the recited "recorder means" was construed under § 112(6) with the "corresponding structure" being the digital recorder 16. In claim 65, the "said memory" can only refer to the "memory" in the "recorder means" limitation, and hence the digital recorder 16. Thus, as with claim 61, the "corresponding structure" for the "means for defining the locations in which [the digital recorder] holds said data" is the digital recorder itself – or, more precisely, those portions of a digital recorder "of standard design" that allow the recorder to perform the stated function. Once again, however, that conclusion does not foreclose the defendants from raising the issue of indefiniteness at trial or through dispositive motions.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The "means for defining" in claims 61 and 65 should be construed as a means-plus-function limitation under § 112(6). The recited function in claim 61 is "defining the locations in which said recorder means holds said records," and in claim 65 is "defining the locations in which said memory holds said data." The disclosed structure "corresponding" to those functions is digital recorder 16.

Under the terms of § 112(6), those limitations should therefore be construed to cover that corresponding structure and equivalents thereof.

IX. Harvey VI

A. Disclosure

Harvey VI issued from an application that was filed as a continuation of the application maturing into Harvey V. Thus, Harvey V and VI share the same specification and drawings. Accordingly, the background and discussion of Harvey V is applicable to Harvey VI.

B. Summary of the Substantive Prosecution History

1. Original Application – May 3, 1993

Harvey *et al.* filed application Ser. No. 56,501 on May 3, 1993, as a continuation of the application maturing into Harvey V. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 6 of 7) at PID00523. As filed, that application contained only three claims, all independent. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 6 of 7) at PID01092-94. Those claims are reproduced below:

1. A method of processing control signals and controlling equipment at a remote site based on broadcast transmissions including:
 - (a) the step of receiving at said remote site a broadcast carrier transmission;
 - (b) the step of demodulating said broadcast carrier transmission to detect an information transmission therein;
 - (c) the step of detecting and identifying at said remote site control signals associated with said information transmission;
 - (d) the step of passing at least a portion of said control signals to a computer control means at said remote site;
 - (e) the step of said computer control means determining based on instructions included in said control signals whether receiver means at said remote site is operating; and
 - (f) the step of directing, based on the result of said determination step, said information transmission and a selected portion of said control signals to (1) said receiver means and associated computer equipment or (2) a recorder means activated by said computer control means.
2. A method of processing control signals and controlling equipment at a remote site based on a broadcast transmission, including:
 - (a) the step of receiving at a remote site a broadcast carrier transmission;
 - (b) the step of demodulating at a remote site a broadcast carrier transmission;
 - (c) the step of detecting and identifying at said remote site control signals associated with said information transmission;

- (d) the step of passing at least a portion of control signals to a computer control means at said remote site;
- (e) the step of comparing a selected position of said control signals with a code imputed [sic] into said computer control means on the basis of information contained in said information transmission; and
- (f) the step of activating a printing means when the comparison step provides a match between the inputted code and the selected portion of the control signals.

3. A method of processing control signals and controlling equipment at a remote site based on a broadcast transmission, including:

- (a) a step of receiving at said remote site a broadcast carrier transmission;
- (b) the step of demodulating said broadcast carrier transmission to detect an encrypted information transmission therein;
- (c) the step of detecting and identifying at said remote site control signals associated with said encrypted information transmission;
- (d) the step of passing at least a portion of said control signals to a computer control means at said remote site;
- (e) the step of said computer means identifying the remote site receiver, determining an identification code for said remote site receiver and comparing said identification code for said remote site receiver to a list of authorized information recipients;
- (f) the step of said computer means directing a selected portion of said control signals to a decryptor means based on a favorable result of said identification step; and
- (g) the step of decrypting said information transmission.

2. Preliminary Amendment – July 14, 1993

On July 14, 1993, Harvey *et al.* filed a preliminary amendment adding new application claims 4-56, without comment. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 6 of 7) at PID01118-44.

3. Office Action – September 27, 1993

In an office action of September 27, 1993, the examiner rejected claims 1-3 “under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the prior invention as set forth in claims 1-71 of U.S. Patent No. 5,233,654 [Harvey V].” The examiner reasoned that “[a]lthough the conflicting claims are not identical, they are not patentably distinct from each other because the scope of the present claims are included in the patented claims.” *See Plaintiffs’ Opening Markman Brief, Apx. F (Vol. 6 of 7) at PID01148.* The examiner explained that “[a] timely filed terminal disclaimer in compliance with 37 CFR 1.321(b) would overcome an actual or provisional rejection on this ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.78(d).” *Id.*

The examiner did not address pending new application claims 4-56.

4. “Letter Bringing A Discrepancy To The Attention Of The Patent And Trademark Office” – September 30, 1993

Harvey *et al.* noticed that the examiner had not addressed claims 4-56 in the office action. Accordingly, Harvey *et al.* wrote a letter to the examiner bringing that perceived “discrepancy” to the examiner’s attention:

An Office Action in the above-described patent application was mailed on September 27, 1993. However, the Office Action indicates that the application was examined only with respect to the originally filed claims 103, and did not consider the claims added by the Preliminary Amendment filed on July 14, 1993. Thomas Scott contacted the Examiner who indicated that he was unaware of the Preliminary Amendment.

Enclosed is a copy of the Preliminary Amendment and a copy of the stamped filing receipt acknowledging that the Preliminary Amendment was filed on July 14, 1993. It is respectfully requested that the Examiner withdraw the September 27, 1993 Office Action and issue a new Action that addresses the claims added in the Preliminary Amendment.

See Plaintiffs’ Opening Markman Brief, Apx. F (Vol. 6 of 7) at PID01151.

5. Response to Office Action – December 27, 1993

Harvey *et al.* apparently followed their letter with a telephone call to the examiner, as their formal response to the office action indicates. *See Plaintiffs' Opening Markman Brief, Apx. F (Vol. 6 of 7) at PID01163.* In their response, Harvey *et al.* again explained the perceived "discrepancy," and requested the examiner to withdraw the office action and issue a new action addressing all of the pending claims:

As indicated in Applicants' letter to the Patent Office dated September 30, 1993, an Office Action in the above-described patent application was mailed on September 27, 1993. However, the Office Action indicates that the application was examined only with respect to the originally filed claims 1-3, and did not consider the claims added by the Preliminary Amendment filed on July 14, 1993.

Attorney for Applicants has since spoken to the Examiner who stated that he would withdraw the September 27, 1993 Office Action and issue a new action. Applicants hereby respectfully reiterate their request for the Examiner to withdraw the September 27, 1993 Office Action and issue a new Action that addresses the claims added in the Preliminary Amendment.

Id.

6. Notice of Allowability – March 31, 1994

Thereafter, the examiner issued a Notice of Allowability allowing all 56 pending claims to issue. *See Plaintiffs' Opening Markman Brief, Apx. F (Vol. 6 of 7) at PID01188.* The examiner explained that "[i]n view of the earlier filed - later processed preliminary amendment of July 13, 1993, the rejection of September 27, 1993 is withdrawn" and "[c]laims 1-56 are allowable over the prior art of record." *Id.* at PID01190. The examiner provided the "Examiner's Statement of Reason for Allowance."

The claims are allowed because no prior art could be found which would render obvious, in a signal processing system, the use of digital detection in a switched input receiver.

Id.

7. Issued Claims

Harvey VI issued with 56 claims, every one of them independent. Based on the parties' *Markman* submissions, disputed terms appear to be found in claims 6-8, 11-13, 15-19, 22, 24, 44 and 46. Those claims are too many to be reproduced at this point. However, those claims are reproduced below to the extent deemed helpful.

C. Agreed Terms

The parties agree that the following terms either require no construction, or may be construed in the same way as or consistently with a different term construed below: (1) "television receiver," *see* Joint Summary at 71, (2) "information of [the reaction of a viewer]," *see id.* at 73, (3) "data of," *see id.* at 74, (4) "mass medium receiver," *id.* at 72, (5) "specific mass medium program content," *id.* at 73, (6) "specific television program content," *see id.* at 71.

The parties also agree that the term "digital detector" means "a device that acts to detect the digital signal information in another stream of information" as construed by the Federal Circuit in *Personalized Media*, 161 F.3d at 701. *See* Joint Summary at 69.

D. Disputed Terms

1. "television program transmission"

The disputed term appears in claims 6, 7, 8, 10, 11, 15, 17, 19, 22 and 23. Claim 6 is selected as representative, and is reproduced below for reference, with the disputed term in boldface:

6. A system for identifying a predetermined signal in a **television program transmission** in which a plurality of signal types are transmitted said signal being transmitted in a varying location or a varying timing pattern, said **television program transmission** being separately defined from standard analog video and audio television, said system comprising:

a digital detector for receiving said transmission and detecting said predetermined signal in said transmission based on either a specific location or a specific time; and

a controller operatively connected to said detector for causing said detector to detect said predetermined signal based on either a specific location or time, said controller being programmed with either the varying locations or the varying timing pattern of said signal.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Television Program Transmission" should be construed as follows: "a single transmission enveloped within a single carrier wave. It may be an analog transmission, or it may be a digital transmission. It can contain a traditional broadcast TV channel, or modern cable or orbital satellite channels that can accommodate multiple simultaneous programs and services."

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

The term "television program transmission" means "a single transmission of television programming enveloped within a single channel." This term should be construed not to include a multi-channel transmission or a transmission that delivers multiple "channels" of television programming.

Post-Hearing: "[T]elevision program transmission" means "a single transmission enveloped within a single carrier wave. It may be an analog transmission, or it may be a digital transmission. It can contain a traditional broadcast TV channel, but may not contain modern cable or orbital satellite channels that can accommodate multiple simultaneous programs and services."

Plaintiffs' Harvey VI Chart at 1; Defendants' Harvey VI Chart at 1; Joint Summary at 37.

The parties urge that the construction of "television program transmission" should apply to that term as it appears in claims 7, 8, 10, 11, 15, 17, 19, 22 and 23.

The plaintiffs contend that their construction includes all of the television programming contained in a single transmission enveloped within a single carrier wave whether the transmission be analog or digital. According to the plaintiffs, the specification discloses that a television transmission program can be an analog or digital television program transmission, and that there is nothing in the prosecution history to exclude digital television or to exclude a multi-program digital transmission. The plaintiffs also rely on the Federal Circuit's construction of "television program transmission" in *Personalized Media*, 161 F.3d at 707. Additionally, the plaintiffs point to special master Harmon's construction of the disputed term as "a single channel television transmission," i.e. a single communication channel, not a single television program channel. According to the plaintiffs, the defendants' proposed construction is not supported by the intrinsic evidence, and relies on an irrele-

vant discussion of conventional analog television transmission in that Federal Circuit case. According to the plaintiffs, the defendants take advantage of apparent confusion between the term "channel" in its technical sense and that term in its nontechnical sense. The plaintiffs urge that the defendants apparently acknowledge that the disputed term encompasses a digital television transmission, but superimpose analog television requirements such as that the digital television transmission (1) must follow an analog television format (separate video and audio subcarriers), (2) must follow analog television band width standards (6 Mhz) and (3) must carry only a single program-like analog television. Plaintiffs' Opening *Markman* Brief at 51-54.

According to the defendants, the Federal Circuit has already construed the disputed term, and that term excludes a multi-program digital television transmission. The defendants contend that although the specification mentions digital television transmissions, that disclosure fails to provide any enabling description of a system using MPEG-2 compressed, non-line based, digital television transmissions or using a serial stream of digital data packets and associated packet identifiers to transmit multiple "channels" of television programming and services on a single carrier wave. Defendants' Opening *Markman* Brief at 66-69.

b) Discussion

At the outset, the parties agree that a "television program transmission" at least means (1) "a single transmission enveloped within a single carrier wave." The parties further agree that a "television program transmission" (2) "may be an analog transmission, or it may be a digital transmission," and (3) that "it can contain a traditional broadcast TV channel." The dispute concerns whether a "television program transmission" can include "modern cable or orbital satellite channels that can accommodate multiple simultaneous programs and services," i.e., whether one channel can contain multiple programs.

As for (1), the parties adopt the Federal Circuit's construction of this term in *Personalized Media*, 161 F.3d at 707. There, the Federal Circuit considered the term "television program transmission" – the same term, in the same claim of the same patent with the same prosecution history, as is at issue here. According to the Federal Circuit, "the specification uses this phrase to denote a single

transmission enveloped within a single carrier wave.” *Personalized Media*, 161 F.3d at 707. That claim construction must therefore control here.

There is also no dispute that a “television program transmission” may be a digital transmission, *i.e.*, a single digital transmission enveloped within a single carrier wave. The dispute is whether that single transmission, whether analog or digital, may carry more than one television program. That dispute, though, ultimately hinges on what the word “channel” means. In other words, is a “channel” limited to a single program, or does it also include a single transmission carrying multiple programs?

Technical and other explanations of the disputed term do not resolve that issue. As noted above in construction of the term “television program material” in Harvey I, the term “television” is generally defined as “1: the transmission and reproduction of transient images of fixed or moving objects; *specif.* an electronic system of transmitting such images together with sound over a wire or through space by apparatus that converts light and sound into electrical waves and reconverts them into visible light rays and audible sound,” WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY 2351 (1981), and “program” as “b: the performance or execution of a program; *esp.* a performance broadcast on radio or television.” *Id.* at 1812. “Transmission” means “1. The process of transferring a signal, message, picture, or other form of intelligence from one location to another location by means of wire lines, radio, light beams, infrared beams, or other communication systems. 2. A message, signal, or other form of intelligence that is being transmitted.” MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS ____ (6th ed. 2003). *See also* OXFORD ENGLISH DICTIONARY ONLINE (2nd ed. 1989) (“conveyance or passage through a medium, as of light, heat, sound, *etc.*; also, a series of electrical signals or electromagnetic waves transmitted, a broadcast”). Nothing in those definitions, of course, limits the term “television program transmission” *per se* to a single channel or program transmission, whether analog or digital. Nor, for that matter, do those definitions address the dispute. The issue thus is whether one of ordinary skill in the art in the relevant time frame would have understood the term, in view of the specification, to connote a single program transmission, or a multiple-program transmission.

In urging that the disputed term is limited to a single program, the defendants rely on *Personalized Media*. In particular, the defendants point to what they say is the Federal Circuit's rejection of multi-program transmission. The Federal Circuit commented that "[t]he specification does not suggest that a 'television program transmission' can be a multi-channel transmission, as PMC contends in support of its claim construction." 161 F.3d at 707. The defendants reason that a "channel" carries one program, and so the Federal Circuit's exclusion of a "multi-channel transmission" means exclusion of a multi-program transmission. Hence, the dispute over the word "channel."

From the foregoing statement, though, it is not immediately clear what the Federal Circuit meant by "channel." Thus, *Personalized Media* requires a closer look. In *Personalized Media*, plaintiff PMC (who is also one of the plaintiffs in this case), had complained that various imported Digital Satellite Systems (DSSs) infringed claims 6, 7 and 44 of Harvey VI. Again, those same claims are at issue here. The United States International Trade Commission ("the Commission") investigated the matter and determined, *inter alia*, that those claims were (1) not infringed and (2) invalid for indefiniteness.⁵⁷ PMC appealed.

On review, the Federal Circuit explained by way of background the subject matter of claims 6 and 7:

The system of the '277 patent includes a unique receiver station that detects and manipulates digital control signals that are embedded in a complex broadcast or cablecast transmission. The specification highlights several benefits that result from the detection and use of the control signals. For example, the control signals can be detected by receiver stations and used to select a specific program from a multi-channel programming transmission. See '277 patent, col. 17, l. 63 to col. 18, l. 2. The control signals can alternatively be used to remotely control the operation of peripheral devices such as VCRs. See *id.*, col. 10, ll. 34-39.

As explained in the specification, a given broadcast can contain several control signals which appear at varying "locations" within the broadcast:

In programming transmissions, given signals may run and repeat, for periods of time, continuously or at regular intervals. Or they may run only occasion-

⁵⁷ The issue of indefiniteness concerned proper construction of the term "digital detector," which the Federal Circuit concluded was definite. That holding is not pertinent to the present discussion and will not be further discussed here. Nor, for the same reason, are the issues surrounding claim 44 discussed here.

ally or only once. They may appear in various and varying locations. In television they may appear on one line in the video portion of the transmission such as line 20 of the vertical interval, [Note – at this point, the court inserted a footnote: “Although the patent specification is not clear as to the meaning of the words ‘vertical interval,’ a term of art, we understand them to refer to a portion of the video broadcast that is not normally visible on a television set.”] or on a portion of one line, or on more than one line, and they will probably lie outside the range of the television picture displayed on a normally tuned television set. In television and radio they may appear in a portion of the audio range that is not normally rendered in a form audible to the human ear. . . . In all cases, signals may convey information in discrete words, transmitted at separate times or in separate locations, that [the] receiver apparatus must assemble in order to receive one complete instruction.

Id., col. 9, l. 61 to col. 10, l. 16. Because the location of a given control signal can vary within the transmission, a controller within the system can be programmed or “preinformed” with this location information or other information concerning the control signal in order to identify only the relevant control signal while disregarding other signals. This is also explained in the specification, which notes that “the pattern of the composition, timing, and location of embedded signals may vary in such fashions that only receiving apparatus that are [sic] preinformed regarding the patterns that obtain at any given time will be able to process the signals correctly.” *Id.*, col. 9, ll. 43-47. [Emphasis added.]

Id. at 698. Those “aspects of the disclosure,” the Federal Circuit explained, were addressed in claims 6 and 7.

The Federal Circuit also reviewed the Commission’s determinations as to infringement of claims 6 and 7. PMC had offered infringement arguments based on (1) construction of the claim term “location,” and (2) use of Service Channel IDs (SCIDs) in the accused DSSs.”

The ALJ considered two arguments concerning infringement by the accused DSSs. The first turned on PMC’s proffered construction of the claim term “location.” The ALJ concluded, based in large part on the portion of the specification quoted *supra*, that the term “location” included “a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission.” Initial Determination at 88. Accordingly, the ALJ rejected PMC’s argument that the term “location” refers to the “carrier wave”⁵⁸ of the control signal of the claims, and therefore that selec-

⁵⁸ At this point, the court inserted a footnote:

Understanding PMC’s argument requires a brief explanation of television broadcast technology. When a television program is broadcast, the program information or “baseband” signal is enveloped within a

tion of a given carrier wave in a multi-channel transmission is a selection of a control signal based on its location. See *id.* at 93. The ALJ, *inter alia*, found PMC's proffered construction to conflict with the requirement of the claims that the control signal appear in a "television program transmission," which the ALJ construed as referring to a single-channel and not a multi-channel transmission. *Id.* at 89-90.

The second infringement argument concerned the use of Service Channel IDs (SCIDs) in the accused DSSs. The function of a SCID was explained by a witness for one of the intervenors as follows:

[A] single data stream [comes] into the tuner, demodulator, and Forward Error Correction circuitry. After this point, the single data stream goes into the Transport IC, where the individual packets of data . . . are looked at and, if the SCID of the packet matches the SCID of the selected channel, those video and audio data packets are then [decoded]. There is no location or timing pattern associated with the data processing. These packets arrive in a[n] unpredictable order with unpredictable timing.

Id. at 228. Central to the ALJ's conclusion that the SCID does not constitute the control signal of the claims and thus does not infringe was his conclusion that the SCID is "information of the 'composition'⁵⁹ of a signal, rather than its 'location.'" *Id.* at 228. The ALJ was assisted in this conclusion by the fact that claim 7 draws a distinction between a signal's composition and its location.⁶⁰ The ALJ thus concluded that the accused DSSs did not identify the SCID at a "specific

"carrier wave" whose frequency corresponds to a particular television channel. This process is known as "modulation." When the modulated signal is received at a given television set, the tuner of the set is used to select a given carrier wave in accordance with its frequency. The selected carrier wave is then "demodulated" such that the carrier wave is in essence stripped away, revealing the baseband signal, which is then used directly by the circuitry of the set to display the picture.

Id. at 701 n.6.

⁵⁹ At this point, the court inserted another footnote:

The specification provides insight into what constitutes the "composition" of signal information. For example, one signal's composition commences with "header" information, followed by an "execution segment," a "meter-monitor segment," and an "information segment." See '277 patent, col. 27, ll. 37-47. The ALJ concluded that the "header" information disclosed in the '277 patent was "the equivalent of" the SCID of the accused devices. See Initial Determination at 229.

Id. at 701 n.7.

⁶⁰ The court inserted another footnote:

Claim 7 reads in relevant part: "said controller being programmed with information of the *composition* of said signal or with either the varying *location* or the varying timing pattern of said signal." [Court's emphasis.]

Id. at 701 n.8.

location" and therefore did not infringe either claim 6 or 7. See *id.* at 230, 233. [Emphasis added.]

Id. at 701. Thus, according to the court, the Commission had concluded that a "television program transmission" was a single-channel and not a multi-channel transmission. Actually, though, in reviewing the Commission's report, the ALJ had concluded, in the context of construing the limitation "based on either a specific location or a specific time," that "[t]he plain language of claim 6 requires 'a predetermined signal in a television program transmission with said 'predetermined signal' being transmitted in a varying location within that transmission, and being detected based on its specific location within that transmission. Thus, the administrative law judge finds that claim 6 is directed to a single 'television program transmission' not multiple transmissions. Moreover, this plain language of claim 6 is supported by the language of the specification, which teaches that 'SPAM signals can be embedded in many different locations in electronic transmissions.'" Plaintiffs' Opening *Markman* Brief, Exh. E: ITC Opinion at 89-90 (citing col. 48, lines 52-53⁶¹).

The Federal Circuit then addressed PMC's arguments on appeal:

We understand PMC to make two arguments concerning infringement of claims 6 and 7. PMC's first argument is that the ALJ erred in construing the term "location" to preclude selection of a control signal based on selection of a particular carrier wave in a multi-carrier transmission. After considering the claim language and those portions of the specification cited to us by PMC, we disagree with PMC that the ALJ misconstrued the term "location." Without going into unnecessary detail, we note that the term "location" in claims 6 and 7 refers to the position of a control signal within a "television program transmission," and that the specification uses this phrase to denote a single transmission enveloped within a single carrier wave. The specification does not suggest that a "television program transmission" can be a multi-channel transmission, as PMC contends in support

⁶¹ In full, the paragraph in which that sentence is found reads thus:

SPAM signals can be embedded in many different locations in electronic transmissions. In television, SPAM signals can be embedded in the video portion or in the audio portion of the transmission. In the video portion, SPAM signals can be embedded in each frame on one line such as line 20 of the vertical interval, or on a portion of one line, or on more than one line, and they will probably lie outside the range of the television picture displayed on a normally tuned television set. SPAM signals can be embedded in radio audio transmissions. In the audio of television and radio transmissions, SPAM signals will probably be embedded in a portion of the audio range that is not normally rendered in a form audible to the human ear. In television audio, they are likely to lie between eight and fifteen kilohertz. In broadcast print and data communications transmissions, SPAM signals can accompany conventional print or data programming in the conventional transmission stream.

of its claim construction. The ALJ correctly construed the term "location" in accordance with the examples provided in the specification, viz., a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission, see '277 patent, col. 9, l. 61 to col. 10, l. 16.⁶² examples which involve only single channel transmissions. [Emphasis added.]

Id. at 707. In short, the Federal Circuit agreed with the Commission that a "television program transmission" meant a single-channel transmission, not a multi-channel transmission. That conclusion, though, appears to be based more on the court's understanding of the background technology, as discussed in footnote 58 rather than on the ALJ's conclusions, because the ALJ does not appear to have expressly defined the disputed term in that manner. As noted above, the ALJ had concluded that "claim 6 is directed to a single 'television program transmission' not multiple transmissions." The ALJ did, however, note in a footnote that PMC's expert had "testified that none of the digital detectors disclosed in the '377 specification Figure 2A have a multichannel television transmission input," i.e., "no 'digital detector' show[n] in the '277 specification receives more than one 'carrier frequency' or more than one 'television channel.' " Plaintiffs' Opening *Markman* Brief, Exh. E: ITC Opinion at 89 n.45. In any case, that is what the Federal Circuit concluded. The Federal Circuit then considered PMC's argument that substantial evidence did not support the Commission's finding of non-infringement, and agreed with PMC as to claim 7, but not as to claim 6, on the basis that the Commission had erroneously distinguished between "location" and "composition" in determining infringement. *Id.* at 707-8.

⁶² That example from Harvey IV referred to by the Federal Circuit is from the "Summary of the Invention."

In programming transmissions, given signals may run and repeat, for periods of time, continuously or at regular intervals. Or they may run only occasionally or only once. They may appear in various and varying locations. In television they may appear on one line in the video portion of the transmission such as line 20 of the vertical interval, or on a portion of one line, or on more than one line, and they will probably lie outside the range of the television picture displayed on a normally tuned television set. In television and radio they may appear in a portion of the audio range that is not normally rendered in a form audible to the human ear. In television audio, they are likely to lie between eight and fifteen kilohertz. In broadcast print and data communications transmissions, the signals may accompany conventional print or data programming in the conventional transmission stream but will include instructions that receiver station apparatus are preprogrammed to process that instruct receiver apparatus to separate the signals from the conventional programming and process them differently. In all cases, signals may convey information in discrete words, transmitted at separate times or in separate locations, that receiver apparatus must assemble in order to receive one complete instruction.

From the foregoing, it is clear that the Federal Circuit did not say exactly what the defendants urge. Actually, the Federal Circuit simply concluded that a "television program transmission" was a single-channel, rather than a multi-channel transmission, which is what the specification discloses in, e.g., Fig. 2A:

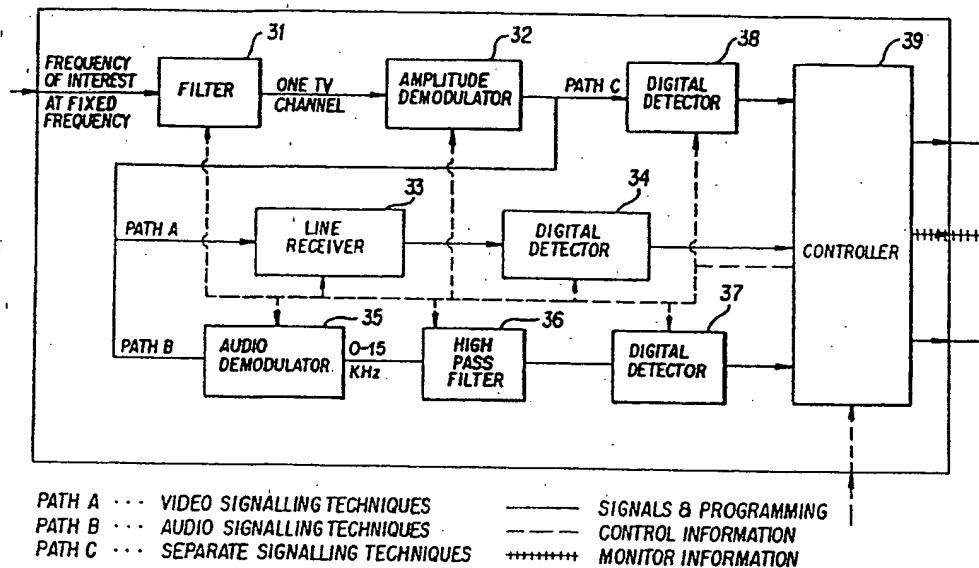


FIG. 2A

The parties, as noted above, agree with that determination. However, that determination does not answer the question of whether that single channel can carry multiple programs. That is, the Federal Circuit did not conclude that "single channel" meant "single program." Even in the "brief explanation of television broadcast technology," the court did not discuss whether a "carrier wave" could carry more than one program in the "baseband signal." (See footnote 58, above).

The "customary" meaning of "channel" does not appear to be limited to a single television program *per se*. A "channel," in the field of electrical communications, is defined both as (1) a "single path for transmitting electric signals, usually in distinction from other parallel paths," (with the notation that the word "path" includes both frequency and time division) and (2) as a "band of frequencies." *Id.* at 157. *Accord MODERN DICTIONARY OF ELECTRONICS* 767-68 (7th ed. 1999) (defining "channel" as "1. A portion of the spectrum assigned for the operation of a specific carrier and the minimum number of sidebands necessary to convey intelligence. 2. A single path for transmit-

ting electric signals. (Note: The word *path* includes separation by frequency division or time division.)"). See also ACADEMIC PRESS DICTIONARY OF SCIENCE AND TECHNOLOGY (defining "channel" as "Telecommunications, the portion of a frequency spectrum that is assigned for the operations of one specific carrier, such as a television broadcasting facility to ensure clear communications. *Electronics*. 1. the single path for transmitting an electric signal.")". Other sources have defined "television channel" as "[a] band of frequencies 6 megahertz wide in the television broadcast band, available for assignment to a television broadcast station." McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS 1996 (5th ed. 1994). See also MODERN DICTIONARY OF ELECTRONICS 767-68 (7th ed. 1999) (defining "television channel" as a "band of frequencies 6 megahertz wide in the television broadcast band, assigned to television broadcasting stations. The channel for associated sound signals may or may not be considered part of the television channel. [description of VHF and UHF channels deleted]"). Those definitions thus refer to a "television broadcast band," i.e., the available frequency assignments made by the Federal Communications Commission (FCC). The AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS 1158 (7th ed. 2000), though, defines "television channel" without reference to the "television broadcast band" as "[a] channel suitable for the transmission of television signals. The channel for associated sound signals may or may not be considered a part of the television channel." Overall, the characteristic shared by those definitions is (1) a single path (wherein *path* includes separation by frequency division or time division) or (2) band of frequencies suitable for transmission of television signals. Either way, though, nothing in those definitions limits a "channel" to a single television program.

Nevertheless, it is worth noting that Harvey *et al.* uniformly correlated a "channel" in the specification to one program, *i.e.*, each channel carried one program. For example, in Fig. 3, Harvey *et al.* describe processing of signals in a "conventional multi-channel cable transmission."

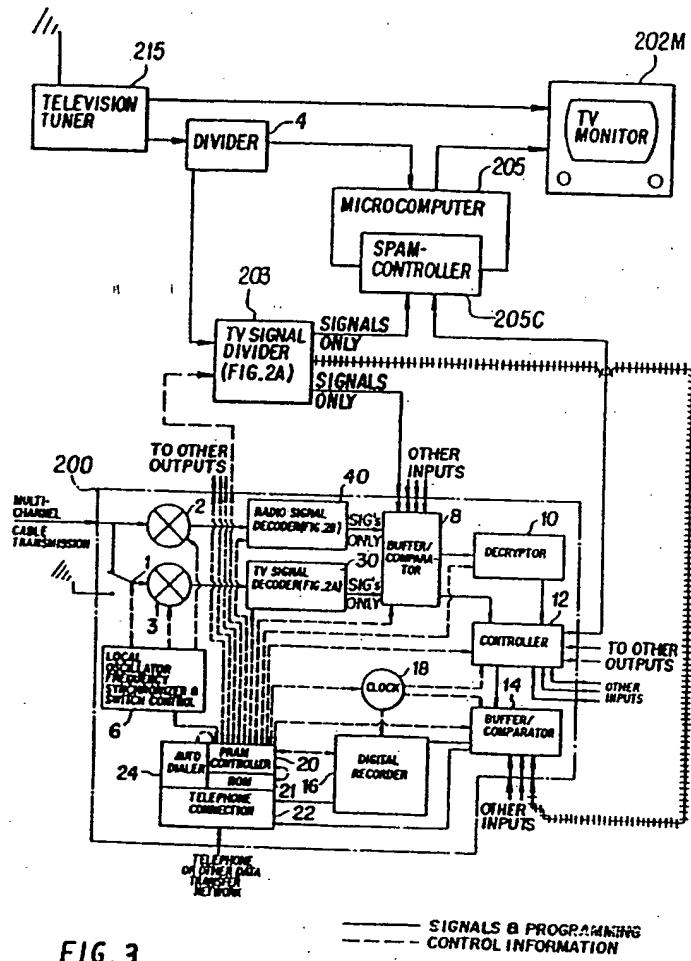


FIG. 3

Harvey *et al.* explain that "[v]ia a conventional multi-channel cable transmission, in a fashion well known in the art, four channels of conventional television programming *** are inputted to a first alternate contact of switch, 1, and to mixer, 2. Said television channels are transmitted normally assigned to channels 2, 4, 7, and 13 of the television frequency spectrum. *** Via a conventional television receiving antenna, three conventional wireless television transmissions are inputted to the second alternate contact of switch, 1. Said wireless transmissions are on the frequencies of the tele-

vision spectrum normally assigned to channels 5, 9, and 13. In a predetermined fashion, controller, 20, controls oscillator, 6, to sequence local oscillator, 6, in the pattern: cable channel 2, cable channel 4, cable channel 7, cable channel 13, wireless channel 5, wireless channel 9, wireless channel 13, then to repeat said pattern." Harvey VI, col. 139, line 59 to col. 140, line 10. There, Harvey *et al.* refer to "conventional" television programming, and provide for reception of a number of channels. Harvey *et al.* then describe the "Wall Street Week" program as being on one of those channels, namely, channel 13:

[T]he "Wall Street Week" program is transmitted on the frequency of channel 13 by a wireless broadcast station whose transmission is retransmitted on the frequency of channel 13 on said cable. Thus a viewer can tune to the "Wall Street Week" program on either wireless channel 13 or cable channel 13. Simultaneously, different programs are transmitted on each of the other television and radio transmissions.

Id. at col. 140, lines 11-20. That is, Harvey *et al.* do not disclose more than one program being carried on any given channel.

Furthermore, it appears that Harvey *et al.* made no exception for "digital television." Harvey *et al.*'s mention of digital television is in the context of what was "well known in the art." Harvey *et al.* explain transmitting "Wall Street Week" in digital format:

[T]he program originating studio that originates the "Wall Street Week" transmission transmits a television signal that consists of so-called "digital video" and "digital audio," well known in the art. Prior to being transmitted, the digital video information is doubly encrypted, * * *. The digital audio is transmitted in the clear. Said studio transmits the information of said program to a plurality of intermediate transmission stations by so-called "landline" means and/or Earth orbiting satellite transponder means, well known in the art. * * * [T]he intermediate station that retransmits "Wall Street Week" program information to the subscriber station of FIG. 4 is a cable television system head end (such as the head end of FIG. 6). Prior to retransmission, said station encrypts the digital audio information of said transmission, in a fashion well known in the art, using particular cipher algorithm C and cipher key Ca, then transmits the information of said program on cable channel 13, commencing at a particular 8:30 PM time on a particular Friday night. [Emphasis added.]

Id. at col. 162, lines 16-43. In that situation, one channel carries one program – even if that program is in a digital format.

In another example of Harvey *et al.*'s discussion of digital television, in a section entitled "Transmitting And Receiving Program Instruction Sets," Harvey *et al.* explained how such program sets were transmitted. According to Harvey *et al.*, "[i]n television, the normal transmission location is in the vertical interval of the television transmission. SPAM signals are not normally transmitted in the visible portion of the television picture because the information of said signals can be seen by viewers (often as so-called 'snow'). However, the transmission capacity of the vertical interval is limited." In the preferred embodiment, then, "the program instruction set information of any given combined medium program is transmitted as soon as possible after commencement of said program, and the present invention includes means and methods to maximize the transmission of program instruction set information at the start of combined medium programs." Specifically, "[i]n the video/computer combined medium, capacity is found by transmitting said sets in portions of the television picture that are covered by locally generated overlays (which in digital television transmissions can include frames of transmitted video that are 'frozen' after reception in fashions well known in the art)."*Id.* at col. 255, lines 4-47. That is, Harvey *et al.* was relying on conventional television at the time, *i.e.*, conventional in 1987. *See also id.* at col. 156, line 61 to col. 157, line 6) ("In the prior art, various means and methods exist for regulating the reception and use of electronically transmitted programming. Various scrambling means are well known in the art for scrambling, usually the video portion of analogue television transmissions ***. Encryption/decryption means and methods, well known in the art, can regulate the reception and use of, for example, digital video and audio television transmissions, digital audio radio and phonograph transmissions, digital broadcast print transmission, and digital data communications." [Emphasis added]).

But again, that does not mean that the claims are necessarily so limited. Although Harvey *et al.* only described a given channel as carrying a single program – whether analog or digital – it is not clear from the specification whether that was fundamental to the invention or simply an embodiment. Indeed, this is not a case in which "the specification read as a whole suggests that the very character of the invention requires the limitation be a part of every embodiment." *Alloc*, 342 F.3d at 1370. Harvey *et al.* disclosed a "Signal Processing Apparatus and Methods," not a particular type of television program transmission. Again, "[i]t is improper for a court to add 'extraneous' limitations to a claim, that is, limitations added wholly apart from any need to interpret what the patentee meant by particular words or phrases in the claim." *Hoganas*, 9 F.3d at 950.

Defendants note, though, that Harvey *et al.* described their invention as using what was “well known in the art” or conventional at that time, namely, in 1987. Thus, an understanding of what was known in the art – particularly in digital television – is necessary. Explanations of television “channels” proffered by the defendants do not limit a “channel” to a single program. Actually, those explanations do not really address that issue. The defendants’ expert, Dr. Rhyne, for example, refers to a definition of “NTSC” from Wikipedia.⁶³

An NTSC television channel as transmitted occupies a total bandwidth of 6 MHz. A guard band, which does not carry any signals, occupies the lowest 250 kHz of the channel to avoid interference between the video signal of one channel and the audio signals of the next channel down. The actual video signal, which is amplitude-modulated, is transmitted between 500 kHz and 5.45 MHz above the lower bound of the channel. The video carrier is 1.25 MHz above the lower bound of the channel. Like any modulated signal, the video carrier generates two sidebands, one above the carrier and one below. The sidebands are each 4.2 MHz wide. The entire upper sideband is transmitted, but only 750 kHz of the lower sideband, known as a vestigial sideband, is transmitted. The colour subcarrier, as indicated above, is 3.579545 MHz above the video carrier, and is quadrature-amplitude-modulated. The highest 250 kHz of each channel contains the audio signal, which is frequency-modulated, making it compatible with the audio signals broadcast by FM radio stations in the 88-108 MHz band. The main audio carrier is 4.5 MHz above the video carrier. Sometimes, a channel can contain an MTS signal, which is simply more than one audio signal. This is normally the case when stereo audio and/or SAP signals are used. [Emphasis added.]

As a practical matter, under the NTSC standard, a channel carries a single program because of, *inter alia*, bandwidth limitations. But that standard is directed toward analog television:

NTSC or the National Television System(s) Committee was an industry-wide standardization body created in 1940 by the FCC in order to resolve conflicts which existed at the time between companies regarding the introduction of a nation-wide analog television system for the United States. It issued a black-and-white standard in March 1941. In January 1950 the committee was re-created, this time to decide about color television, and in March 1953 unanimously approved what is now simply called the NTSC color television standard. The update retained full compatibility with older black-and-white television sets. [Emphasis added.]

⁶³ <http://en.wikipedia.org/wiki/NTSC> (last visited June 9, 2004).

Id. In any event, the dispute does not particularly concern analog television, but rather capabilities offered by digital television.

Turning, then, to digital television, one objective background source is the Federal Communications Commission ("FCC"). Apparently, the FCC first adopted a digital television ("DTV") standard in 1996. The MODERN DICTIONARY OF ELECTRONICS (7th ed. 1999), at 200, explains "digital television" as:

Abbreviated DTV.

1. A television system in which reduction or elimination of picture redundancy is obtained by transmitting only the information needed to define motion in the picture, as represented by changes in areas of continuous white or black.
2. An umbrella term used to describe the digital television system adopted by the FCC in December 1996.

The FCC website⁶⁴ also explains that "DTV is a new type of broadcasting technology that will transform television as we now know it. DTV technology will allow broadcasters to offer television with movie-quality picture and CD-quality sound, along with a variety of other enhancements. DTV technology can also be used to transmit large amounts of other data into the home, which may be accessible by using your computer or television set." The FCC site also provides a "Supporting Documents" timeline⁶⁵ that indicates the 1996 date of adoption of DTV standards. The Fourth Report and Order ("Order") adopting on December 24, 1996, those standards, stated in the Introduction section:

1. In this, the Fourth Report and Order in our digital television ("DTV") proceeding, we adopt a standard for the transmission of digital television. This standard is a modification of the ATSC DTV Standard proposed in the Fifth Further Notice of Proposed Rule Making [of May 9, 1996] and is consistent with a consensus agreement voluntarily developed by a broad cross-section of parties, including the broadcasting, consumer equipment manufacturing and computer industries. As explained below, the Standard we adopt does not include requirements with respect to scanning formats, aspect ratios, and lines of resolution. For clarity, we will refer to this modified standard as the "DTV Standard."

⁶⁴ <http://www.fcc.gov/dtv/> (last visited June 6, 2004).

⁶⁵ <http://www.fcc.gov/dtv/documents.html> (last visited June 6, 2004).

Id. at 2 (referring to the PDF version⁶⁶). According to the “Background” section of that Order, the process of developing the standards began in 1987:

4. This proceeding began in 1987, when we issued our first inquiry into the potential for advanced television (“ATV”) services. * * * * In the fall of 1987, a few months after initiating this rulemaking proceeding, we established the Advisory Committee on Advanced Television Service (“Advisory Committee” or “ACATS”) to provide recommendations concerning technical, economic and public policy issues associated with the introduction of ATV service. Early in the process we decided that no additional spectrum would be allocated for television broadcasting, but that existing broadcasters should be permitted to upgrade their transmission technology so long as the public remains served throughout any transition period. We later decided “that an ATV system that transmits the increased information of an ATV signal in a separate 6 MHz channel independent from an existing NTSC channel will allow for ATV introduction in the most non-disruptive and efficient manner.” As the proceeding progressed, all-digital advanced television systems were developed and we began to refer to advanced television as digital television (“DTV”) in recognition that, with the development of the technology, it was decided any ATV system was certain to be digital. In February of 1993, the Advisory Committee reported that a digital HDTV system was achievable, but that all four competing digital systems then under consideration would benefit significantly from further development and none would be recommended over the others at that time. In May of 1993, seven companies and institutions that had been proponents of the four tested digital ATV systems, joined together in a “Grand Alliance” to develop a final digital ATV system for the standard. Over the next two-and-a-half years, that system was developed, extensively tested, and is documented in the ATSC DTV Standard. On November 28, 1995, the Advisory Committee voted to recommend the Commission’s adoption of the ATSC DTV Standard.

5. The system described by the ATSC DTV Standard is generally recognized to represent a significant technological breakthrough. It includes discrete subsystem descriptions, or “layers,” for video source coding and compression, audio source coding and compression, service multiplex and transport, and RF/transmission. In addition to being able to broadcast one, and under some circumstances two, high definition television (“HDTV”) programs, the Standard allows for multiple streams, or “multicasting,” of Standard Definition Television (“SDTV”) programming at a visual quality better than the current analog signal. Utilizing this Standard, broadcasters can transmit three, four, five, or more such program streams simultaneously. The Standard allows for the broadcast of liter-

⁶⁶ The FCC website provides the order, styled “In the Matter of Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service,” in different formats. The PDF format is located at http://www.fcc.gov/Bureaus/Mass_Media/Orders/1996/fcc96493.pdf.

ally dozens of CD-quality audio signals. It permits the rapid delivery of large amounts of data; an entire edition of the local daily newspaper could be sent, for example, in less than two seconds. Other material, whether it be telephone directories, sports information, stock market updates, information requested concerning certain products featured in commercials, computer software distribution, interactive education materials, or virtually any other type of information access can also be provided. It allows broadcasters to send, video, voice and data simultaneously and to provide a range of services dynamically, switching easily and quickly from one type of service to another. For example, a broadcaster could transmit a news program consisting of four separate, simultaneous SDTV program streams for local news, national news, weather and sports; then transmit an HDTV commercial with embedded data about the product; then transmit a motion picture in an HDTV format simultaneously with unrelated data. [Emphasis added.]

Id. at 3-4.⁶⁷ That is, in 1987, DTV was in the nascent stages of development, and was apparently not commercially available for use. Some time between 1987 and 1993, "all-digital advanced television systems were developed," but it was not until 1993 that various companies agreed to work together to develop a workable DTV standard. By 1996, though, "multi-casting" was available, which allowed broadcasters to "transmit three, four, five, or more such program streams simultaneously," e.g., "a broadcaster could transmit a news program consisting of four separate, simultaneous SDTV program streams for local news, national news, weather and sports." Thus, at least by 1996, one DTV channel could carry multiple programs.

⁶⁷ "The DTV standard is a very flexible television system that will allow broadcasters to provide new and higher quality services. First, DTV will permit transmission of television programming in new wide screen, high resolution formats known as high definition television (HDTV). In addition, the new DTV television system allows transmissions in standard definition television (SDTV) formats that provide picture resolution similar to existing television service. Both the HDTV and SDTV formats will have significantly better color rendition than the existing analog television system. The DTV system also will allow broadcasters to transmit multiple programs simultaneously using a single television channel. TV stations will, depending on the type and source of programming, be able to transmit multiple SDTV programs or in some cases two HDTV programs. DTV also will provide improved audio quality, similar to that of compact discs, with up to five channels of sound per program." [Emphasis added.] http://www.fcc.gov/Bureaus/Engineering_Technology/Factsheets/dtv9811.html (last visited June 6, 2004).

But such capability was apparently not available in 1987 – or even in the early 1990's. Another source, namely, the Public Broadcasting Service, explains the history of DTV this way:⁶⁸

Since 1939, the NTSC [National Television System Committee] system has been the standard for television in North America and other countries around the world.

At its inception, NTSC was an analog system. A low voltage was chosen to represent black, a larger voltage chosen for white, and the continuous range of voltages between represent a continuous range of grays. This makes it an analog system. For transmission to the home, this voltage is used to continuously vary the amplitude of the transmitted picture carrier.

In the mid 1970's, the digital time base corrector (TBC) was developed as the first device to digitize the video signal. The digital TBC made it possible to use new less-expensive video tape recording formats for broadcast television. Shortly thereafter, digital technology was used for still-image storage and video special effects as well.

In the 1980's, the D1 and D2 video tape formats were developed to allow recording the video signal on tape in a digital form; allowing multi-generation recordings with minimal impairment.

But there remained no practical way to exchange video between equipment in digital form. In each new piece of digital equipment, the signals had to be converted from analog to digital and back with every pass.

With the development of the serial digital interface (SDI) standard, it was possible to interconnect digital equipment in a practical manner, which promoted the development and gradual adoption of serial digital production and routing switchers.

However, the high bit rate required for digital video (from 125 to 270 million bits per second) remained a barrier to more wide-spread acceptance. This bit rate requires expensive tape machines which use a lot of expensive magnetic tape at a cost too high for many professional uses and out of the question for consumer formats. Moreover, costs to distribute this high data rate over satellite or fiber circuits between cities is prohibitive. And, since every television can only receive analog NTSC broadcasts, there was no way to deliver digital signals to the home. At some point, the higher quality provided by digital processing was of no value.

⁶⁸ <http://www.pbs.org/digitaltv/dtvtech/history.htm> (last visited June 6, 2004). See also http://www.tvhandbook.com/news/history_dtv.htm (last visited June 6, 2004); http://www.multi-carrier.net/pdf/the_history_dtb.pdf (last visited June 6, 2004).

since the signal was always degraded by the final NTSC transmission or VHS tape distribution.

Then, in the 1990's, advances in digital signal processing made it possible to build low-cost specialized computer chips to encode the signal into fewer bits by eliminating redundant picture information. Matching decoders reconstruct the original image.

First, "intra-frame" compression was developed, which eliminates redundancy within a single image. A form of this compression was standardized as "JPEG" (Joint Photographic Experts Group), which also came into common use for moving pictures as motion-JPEG, (M-JPEG). By using JPEG compression, images are often reduced to 1/4 of their previous size, with negligible loss in quality. JPEG compression made the non-linear editor and video server practical.

Then, even more powerful computers were applied to the task of determining changes between one image and the next and where each of many small portions of the image may have moved. This technique was standardized as MPEG-1⁶⁹ (Motion Picture Experts Group) for low-quality video, and later as MPEG-2⁷⁰ for broadcast quality video, and formats better than broadcast quality. MPEG-2 made the direct-broadcast satellite practical.

The development of MPEG-2 simultaneous with efforts to create a new standard for high-definition television lead to the FCC's May 1, 1997 mandate that the United States begin to replace NTSC television with digital television. [Emphasis added.]

The foregoing indicates that it was not until the 1990's that digital compression techniques, and more powerful processors, were developed that allowed the digital information to be compressed to 25% of its original size, permitting other compressed programming to be carried in the same chan-

⁶⁹ According to one source "[t]he MPEG-1 standard, established in 1992, is designed to produce reasonable quality images and sound at low bit rates." <http://www.sims.berkeley.edu/courses/is224/s99/GroupG/report1.html> (last visited June 6, 2004). "The Moving Picture Coding Experts Group was established with the mandate to develop standards for coded representation of moving pictures, audio and their combination. Starting from its first meeting in May 1988 when 25 experts participated, MPEG has grown to become an unusually large committee. Usually some 350 experts from some 200 companies and organizations from about 20 countries take part in MPEG meetings. As a rule, MPEG meets three times a year (in March, July and November) but meets more frequently when the workload so demands." *Id.*

⁷⁰ "The MPEG-2 standard, established in 1994, is designed to produce higher quality images at higher bit rates. MPEG-2 is not necessarily better than MPEG-1, since MPEG-2 streams at lower MPEG-1 bit rates won't look as good as MPEG-1. But at its specified bit rates between 3-10Mbits/sec, MPEG-2 at the full CCIR-601 resolution of 720x486 pixels NTSC delivers true broadcast quality video. *** MPEG-2 has also ousted MPEG-3 as the standard for HDTV, and has also received a lot of attention because it's the standard specified for DVD. The primary users of MPEG-2 are broadcast and cable companies who demand broadcast quality digital video and utilize satellite transponders and cable networks for delivery of cable television and direct broadcast satellite." <http://www.sims.berkeley.edu/courses/is224/s99/GroupG/report1.html> (last visited June 6, 2004).

nel. Thus, while DTV was clearly known in 1987, the foregoing indicates that compressing digital programming to enable carrying multiple programs in one channel was not developed until the early 1990's.⁷¹

Again, the issue is not whether the disputed term includes digital television. The parties agree that it does, and as noted above, digital television clearly existed in 1987. The issue is whether the term, by definition, excludes a particular form of digital television technology that clearly did not exist in 1987 and was not developed until a few years later. Certainly, there is nothing in the plain language of the claim, the specification or prosecution history to exclude such technology. Although the components and circuitry disclosed in the embodiments of Harvey VI may be for a system in which each channel carries only one program, simply because the patentee did not disclose an embodiment implementing a multi-program channel or simply because commercial broadcast television in 1987 was analog, does not necessarily mean that the claims must be construed to exclude more advanced digital systems. *See, e.g., In re Hogan*, 559 F.2d 595, 606 (CCPA 1977) ("Appellants disclosed, as the only then existing way to make such a polymer, a method of making the crystalline form. To now say that appellants should have disclosed in 1953 the amorphous form which on this record did not exist until 1962, would be to impose an impossible burden on inventors and thus on the patent system. There cannot, in an effective patent system, be such a burden placed on the right to broad claims. To restrict appellants to the crystalline form disclosed, under such circumstances, would be a poor way to stimulate invention, and particularly to encourage its early disclosure. To demand such restriction is merely to state a policy against broad protection for pioneer inventions, a policy both shortsighted and unsound from the standpoint of promoting progress in the useful arts, the constitutional purpose of the patent laws."). *See also Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1344 (Fed. Cir. 2001) ("Our case law is clear that an applicant is not required to describe in the specification every conceivable and possible future embodiment of his invention. * * * * 'If structural claims were to be limited to devices operated precisely as a specification-described embodiment is operated, there would be no need for claims. Nor could an applicant, regardless of the prior art, claim more broadly than that embodiment.' * * * * In short, it is the claims that measure the invention.").

⁷¹ It is not clear whether an analog television channel could carry multiple programs, whether in 1987 or now, and neither party has addressed the issue.

tion, as informed by the specification. As we noted long ago: ‘Specifications teach. Claims claim.’ (citation omitted.); *CCS Fitness*, 288 F.3d at 1366.

Once again, though, patent claims require § 112(1) support in the specification. “Section 112 of the patent statute describes what must be contained in the patent specification. Among other things, it must contain ‘a written description of the invention, and of the manner and process of making and using it *** [such] as to enable any person of ordinary skill in the art to which it pertains *** to make and use the same ***.’ 35 U.S.C. § 112, ¶ 1. Thus, this statutory language mandates satisfaction of two separate and independent requirements: an applicant must both describe the claimed invention adequately and enable its reproduction and use.” [Citation omitted.] *Amgen*, 314 F.3d at 1330. “The purpose of the written description requirement is to prevent an applicant from later asserting that he invented that which he did not; the applicant for a patent is therefore required to ‘recount his invention in such detail that his future claims can be determined to be encompassed within his original creation.’ *** Satisfaction of this requirement is measured by the understanding of the ordinarily skilled artisan.” *** ‘Compliance with the written description requirement is essentially a fact-based inquiry’ that will ‘necessarily vary depending on the nature of the invention claimed.’ *** Because of its fact intensive nature, we review a district court’s decision on the adequacy of written description for clear error.” [Citations omitted] *Id.* “The enablement requirement is often more indulgent than the written description requirement. The specification need not explicitly teach those in the art to make and use the invention; the requirement is satisfied if, given what they already know, the specification teaches those in the art enough that they can make and use the invention without ‘undue experimentation.’” *Id.* at 1334. “Enablement is a question of law; we therefore review the trial court’s determination de novo, deferring to its assessment of subsidiary facts underlying the legal question unless clearly erroneous.” *Id.* See also *Bruning v. Hirose*, 161 F.3d 681, 686 (Fed. Cir. 1998). Here, though, Harvey *et al.*’s invention is not directed to a “digital” or “analog” television system *per se*; rather, it is directed to a “signal processing apparatus and method,” as the title of Harvey VI suggests. As Harvey *et al.* explained in their abstract, their invention was directed to:

A unified system of program[m]ing communication. The system encompasses the prior art (television, radio, broadcast hardcopy, computer communications, etc.) and new user specific mass media. Within the unified system, parallel proc-

essing computer systems, each having an input (e.g., 77) controlling a plurality of computers (e.g., 205), generate and output user information at receiver stations. Under broadcast control, local computers (73, 205), combine user information selectively into prior art communications to exhibit personalized mass media programming at video monitors (202), speakers (263), printers (221), etc. At intermediate transmission stations (e.g., cable television stations), signals in network broadcasts and from local inputs (74, 77, 97, 98) cause control processors (71) and computers (73) to selectively automate connection and operation of receivers (53), recorder/players (76), computers (73), generators (82), strippers (81), etc. At receiver stations, signals in received transmissions and from local inputs (225, 218, 22) cause control processors (200) and computers (205) to automate connection and operation of converters (201), tuners (215), decryptors (224), recorder/players (217), computers (205), furnaces (206), etc. Processors (71, 200) meter and monitor availability and usage of programming. [Emphasis added.]

Thus, the requirement is that Harvey *et al.* adequately disclose and enable such a signal processing apparatus (at least the "best mode" thereof), not that they necessarily must disclose a certain type of digital television. Nor, as discussed above, do Harvey *et al.* have an obligation to disclose components to enable every conceivable embodiment. As the above abstract indicates, Harvey *et al.* generally disclosed their "signal apparatus" as receiving "transmissions" in the broad categories of television, radio, data, etc. Again, the term "television program transmission" is a broad term that is not *per se* limited to any particular type of channel. The same reasons that the term is not limited to analog apply to the digital context, as well – nothing in the meaning of the term (or intrinsic evidence) limits the "television program material" to a particular type of digital signal.

As noted previously, the defendants bear the burden of proving facts showing that the claims would not meet the requirements of § 112(1). *See Amgen*, 314 F.3d at 1330-1331. *See also Enzo Biochem*, 188 F.3d at 1375. Whether a patent specification provides adequate written description and enablement support requires an analysis, however, that goes beyond the evidence that the parties have submitted in the present record and what the parties have briefed. *See, e.g., Enzo Biochem*, 296 F.3d at 1330 (discussing evolving test for compliance with the written description requirement). Again, *In re Wands*, requires the Court to consider several factors in evaluating whether a patent specification would enable one of ordinary skill in the art to practice an invention without undue experimentation, such as (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention,

tion, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. *See id.*, 858 F.2d at 737. The present record simply does not permit that analysis. Dr. Rhyne points to various aspects of the specification and opines that “a ‘channel’ in the sense of [Harvey VI] does not necessarily connote a particular content or service provider, such as CNN, HBO, the Weather Channel, or the Discovery Channel, as might be the non-technical (‘secular’) sense of the term ‘channel,’ but rather that ‘channel’ as used in [Harvey VI] is clearly limited to that set of those signal components all carried within a specified bandwidth to define a discrete television transmission. That specific bandwidth is selected by FILTER 31 as shown in Figure 2A.” Defendants’ Opening Markman Brief, Exh. 26: Rebuttal Decl. of Dr. Rhyne at ¶¶ 32-34. Dr. Rhyne then points to that discussion of the NTSC above, and concludes that “insofar as that term ‘television program transmission’ is properly construed to mean a single channel transmission and not a multichannel transmission (as I believe it should be), that term is limited to a set of those signal components within a specified bandwidth that together define a discrete television transmission * * * [and] excludes a multiplexed transmission carrying multiple simultaneous video programming services.” *Id.* at ¶¶ 35-36. Then, Dr. Rhyne states his disagreement with various assertions by plaintiffs’ expert, Dr. Bovik, but generally fails to address the factors set out above. *See id.* at ¶¶ 37-40. Otherwise, Dr. Rhyne’s opinion is based on pointing to some of the many elements disclosed in Harvey VI, such as the “conventional cable converter boxes,” that could not receive digital transmission. According to Dr. Rhyne, for example, Harvey VI “provides no disclosure of how one would receive and process digital television transmissions utilizing a conventional cable converter box and a conventional tuner, and a person of ordinary skill in the art would have lacked the necessary information and technology to do so since the art that led to the development and implementation of modern digital television was in its infancy [at] that time.” That may very well be true, but, again, Harvey *et al.* did contemplate processing digital signals, and using digital television, which would appear to suggest to an artisan that the invention went beyond the particular embodiment disclosed. That is not to say, of course, that Dr. Rhyne’s opinion lacks weight or merit. The defendants have posed a valid question of § 112(1) support. What that *is* to say, however, is that what the defendants have presented, when weighed against Dr. Bovik’s opinion, does not meet the clear and convincing standard required as a matter of law. *See Amgen*, 314 F.3d at 1331. Dr. Bovik pointed, for example, to Harvey *et al.*’s disclosure of digital television, digital video, digital audio,

and digital signals processed by "all purpose" decoders, as well as the various signal paths disclosed, to demonstrate the apparently broader capability of the disclosed invention. *See* Plaintiffs' Opening *Markman* Brief, Exh. 3 at ¶¶ 435-443. Again, there is simply not enough evidence of record to show lack of written description support or lack of enablement.

Ultimately, then, and in related fashion, the defendants rely on Harvey *et al.*'s use of the words "conventional" and "well known" in describing the various communications transmissions, such as in the abstract above. In particular, the defendants rely on *Kopykake Enterprises, Inc. v. Lucks Co.*, 264 F.3d 1377, 1383 (Fed. Cir. 2001), in urging that because Harvey *et al.* used words like "conventional" and "well known," multi-program digital channels must be excluded because they did not come into being until years later, *i.e.*, one of ordinary skill in the art would not have understood such a digital channel to be "conventional" or "well known" in 1987. That argument was addressed by the Federal Circuit in *SuperGuide*, 358 F.3d at 879 – and was rejected.

In *SuperGuide*, for example, the Federal Circuit stated:

We find that the district court's and EchoStar's reliance on *Kopykake Enters., Inc. v. Lucks Co.*, 264 F.3d 1377 (Fed. Cir. 2001), as authority for limiting the meaning of the disputed claim language to analog technology is likewise misplaced. The limitation at issue in *Kopykake* required "screen printing" of images on foodstuffs and the accused product used "ink jet printing." *Id.* at 1380. Thus, the issue was whether the claim language "screen printing" literally covered ink jet printing. *Id.* The specification explicitly defined the term "screen printing" as limited to "'conventional'" or then-existing technologies. *Id.* Specifically, the specification stated that "'the term screen printing as used herein encompasses not only conventional screen printing, but also includes any other conventional printing process and any other conventional means.'" *Id.* (citation omitted). Although ink jet systems were well known in the field of paper printing, it was not a conventional printing process for applying images to foodstuffs. *Id.* at 1383-84. We therefore held that ink jet printing was not covered by the claim term at issue. *Id.* at 1384. That holding, however, does not have relevance here because the patentees in *Kopykake* explicitly limited the claim term to technologies that were "conventional" at the time of the invention. In contrast, the '578 patentees did not explicitly limit the disputed claim language to technologies that were "conventional" at the time of the invention.

Id. To expand somewhat, *Kopykake* involved a method for producing edible "base shapes" having printed pictorial images used to decorate foodstuffs, such as cakes, cookies, pies, puddings, and ice

cream. One of the claim limitations called for “screen printing” said at least one edible pictorial image onto said edible base shape.” [Emphasis added.] The accused infringer used inkjet printing. Thus, the infringement issue turned on whether the term “screen printing” should be construed to literally cover inkjet printing. Inkjet printing, of course, involves an entirely different process from screen printing. On its face, therefore, there could be no literal infringement. However, in *Kopykake* the patentee had chosen to specifically define the term “screen printing” in the specification to mean more than “screen printing” *per se*. The specification of the patent-in-suit explained that “The pictorial images will be referred to as being applied to the base shapes by ‘screen printing’, it being understood that the term screen printing as used herein encompasses not only conventional screen printing, but also includes any other conventional printing process and any other conventional means and methods of applying the pictorial images to the base shapes, unless the context should indicate otherwise.” The Federal Circuit accordingly concluded that the term “screen printing” in the claim was not limited to “screen printing” *per se*, but included “any other conventional printing process and any other conventional means and methods” as the patentee had defined the term in the specification. 264 F.3d at 1382. The court then turned to deciding what processes were “conventional” at the time of the invention. The Federal Circuit concluded that the patentee had not shown, from the point of view of one of ordinary skill in the art, that ink jet printing was a conventional method of printing images on foodstuffs at the time the application for the patent-in-suit was filed. Accordingly, although the term “screen printing,” as defined in the specification, additionally covered other “conventional” printing process, the term could not be construed to cover ink jet printing.

As in *SuperGuide*, *Kopykake* does not support the broad proposition that the defendants advance. The claims at issue here simply refer to a “television program transmission,” not a particular type of “television program transmission” or even “conventional” television program transmissions. That term, on its face, is not limited to a particular type of television program transmission as distinguished from the term used in *Kopykake* that limited the claim to a particular type of printing, namely screen printing. Accordingly, the analysis used by the Federal Circuit in *Kopykake* is simply not applicable here, especially given, as discussed *infra*, that the term “television program transmission,” as confirmed by the dictionary definition of the same, is a general term not limited to analog, or digital, or one that otherwise excludes a particular type of “television program transmission.” In *Kopykake*, for example, if the claim had simply referred to “printing” as opposed to a particular type of print-

ing, i.e., "screen" printing, the issue of what the patentee meant by "conventional" printing processes in addition to screen printing would never have been reached. Once again, the Federal Circuit has emphasized that in construing claims, the focus must remain on the actual words of the claims, unless (1) the patentee has chosen to be his own lexicographer, or (2) the patentee has expressly disclaimed subject matter or described a particular embodiment as being important to the invention, or (3) a claim term so deprives the claim of clarity that there is no means to determine the scope of the claim without resort to the specification or prosecution history. *CCS Fitness*, 288 F.3d at 1366-7. See also *Johnson Worldwide*, 175 F.3d at 990; *Texas Digital*, 308 F.3d at 1204. Although a commercial television channel in 1987 may have predominantly (or even solely) included only a single television program, whether in analog or digital form, there is nothing in the specification or prosecution history indicating that the patentee here intended "television program transmissions" to be limited to particular digital formats, i.e., acted as his own lexicographer, or disclaimed coverage of particular types of television program transmissions, or that the term "television program transmission" so deprives the claim of clarity that there is no means to determine the scope of the claim without resort to the specification or prosecution history. If other limitations of the disputed claims effectively limit the broad connotation of "television program transmission" in the manner urged by the defendants, then that is a different matter. But the term "television program transmission" *per se* is not so limited.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

A "television program transmission" is a single transmission enveloped within a single carrier wave. That term is not limited to analog transmission, nor is it limited to a single program or service.

2. "in a television program transmission"

The disputed term appears in claims 6, 7, 8, 10, 11, 15, 17, 19, 22 and 23. Claim 6 is selected as representative, and is reproduced below for reference, with the disputed term in boldface:

6. A system for identifying a predetermined signal **in a television program transmission** in which a plurality of signal types are transmitted said signal being transmitted in a varying location or a varying timing pattern, said television program transmission being separately defined from standard analog video and audio television, said system comprising:

a digital detector for receiving said transmission and detecting said predetermined signal **in said transmission** based on either a specific location or a specific time; and

a controller operatively connected to said detector for causing said detector to detect said predetermined signal based on either a specific location or time, said controller being programmed with either the varying locations or the varying timing pattern of said signal.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"[I]n" a television program transmission means that the signal is "embedded" within the television program transmission.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

The term "in" in claim 6 is a common English word requiring no construction. If a definition of the term "in" is required, it should be defined according to its ordinary meaning, which someone of ordinary skill in the art would understand to be "included, located or positioned within limits; or within means, medium or instrumentality."

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 1-2; Defendants' Opening *Markman* Brief at 69; Joint Summary at 38 and 70.

b) Discussion

The dispute, it appears, is actually over the word "embed." Otherwise, the parties apparently agree that the word "in" means "embed" in the context of the claims, as the following colloquy during the *Markman* hearing illustrates:

MS. KORDZIEL: Here, they have taken the position that "in" means embedded, and they refer to the ALJ's decision in the ITC that predetermined signal in a television program transmission must be a predetermined signal embedded in a television transmission. There, the ALJ had stated that, thus, to the extent that the meaning of the word, and this is on page 46 of his decision, is synonymous with the word embed. The administrative -- whoops. The administrative law judge finds that the ordinary meaning of "in a television program transmission" would include a predetermined signal that was embedded in a television program transmission. And I'm just pointing that out, that "in" and "embedded" were synonymous in that instance.

SPECIAL MASTER PETERSON: So you're agreeing with S-A's proposed construction?

MS. KORDZIEL: No, the reason I'm not is that the ALJ took a very broad meaning of embedded to mean simply "in," and that would be fine, except for the fact that S-A's definition of embedded includes all of those additional limitations that we disagree with.

SPECIAL MASTER PETERSON: All right. That's not really what's in the construction, so I understand, the plaintiffs are saying you agree with the ALJ that "in" is the same as embedded, but you disagree with what S-A says is the scope of embedded; is that correct?

MS. KORDZIEL: Right. If embedded –

SPECIAL MASTER PETERSON: Wait. Wait.

MS. KORDZIEL: I'm sorry.

SPECIAL MASTER PETERSON: Is that correct?

MS. KORDZIEL: That's correct, that embedded is given a broad meaning of "in."

SPECIAL MASTER PETERSON: Okay. My question once again, and I just need a clear record on this, is it the plaintiffs' position that the ALJ was correct that "in" means embed?

MS. KORDZIEL: Yes, embed means -- has a broad interpretation.

SPECIAL MASTER PETERSON: Well, I'm not talking about the definition of embed. Just whatever the definition, broad or narrow, of the ALJ, do the plaintiffs agree with the ALJ's interpretation that "in" means embed?

MS. KORDZIEL: Yes, we agree with the ALJ's interpretation, their interpretation of embedded.

SPECIAL MASTER PETERSON: That "in" means the same thing as embedded?

MS. KORDZIEL: That's correct.

SPECIAL MASTER PETERSON: Okay. All right. So the issue, then, at least -- there is really no issue for this claim term "in a television program transmission," both parties or all parties agree that is equivalent to "embedded in a television program transmission," right?

MS. KORDZIEL: Right. Although I guess our position is "in" is a term that does not need to be defined but --

SPECIAL MASTER PETERSON: Well, no, I'm not asking you that; I'm asking, once again, whether there is a dispute, and I take it from the conversation, now, that "in a television program transmission," everybody agrees means the same thing as "embedded in a television program transmission;" is that correct?

MS. KORDZIEL: At least on behalf of Gemstar.

SPECIAL MASTER PETERSON: Okay. But you don't know what PMC says?

MR. BRIGGS: We will address that point during our closing.

Markman Tr. at 569:12 to 572:1. As it turned out, PMC did not address "that point" during closing, nor, based on the parties' post-hearing Joint Summary and respective briefs, did the plaintiffs' collective position change as a result of the exchange. Presumably, then, the real issue is what the term "embedded" means. That was discussed above in connection with construction of the term "embedded signal" in Harvey III: "embedded" means enclosed within or made an integral part of.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

In the phrase "in a television program transmission," the word "in" means "embedded." "Embedded" means enclosed within or made an integral part of.

3. "plurality of signal types"

The disputed term appears in claims 6 and 24. Claim 6 is selected as representative, and is reproduced below for reference, with the disputed term in boldface:

6. A system for identifying a predetermined signal in a television program transmission in which a **plurality of signal types** are transmitted said signal being transmitted in a varying location or a varying timing pattern, said television program transmission being separately defined from standard analog video and audio television, said system comprising: * * *

PMC/GEMSTAR'S PROPOSED CONSTR.

DEFENDANTS' PROPOSED CONSTR.

Post-Hearing: The phrase "plurality of signal types" should be construed to mean "two or more signals in the transmission having different types or kinds of information."

Post-Hearing: The term "plurality of signal types" does not require construction.

Plaintiffs' Harvey VI Chart at 2-3; Defendants' Harvey VI Chart at 5-9; Joint Summary at 74.

a) Discussion

It is well-settled that a "plurality" means "at least two," or "more than one." See *ResQNet.com, Inc. v. Lansa, Inc.*, 346 F.3d 1374, 1381 (Fed. Cir. 2003). Thus, the disputed term connotes more than one signal type, which is another way of saying what the plaintiffs propose.

b) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The phrase "plurality of signal types" means more than one signal type.

4. "varying location or a varying timing pattern"

The disputed term appears in claims 6, 7, 11, 16, and 24. Claim 6 is selected as representative, and is reproduced below for reference, with the pertinent terms emphasized:

6. A system for identifying a predetermined signal in a television program transmission in which a plurality of signal types are transmitted said signal being transmitted in a **varying location or a varying timing pattern**, said television program transmission being separately defined from standard analog video and audio television, said system comprising:

a digital detector for receiving said transmission and detecting said predetermined signal in said transmission based on either a specific location or a specific time; and

a controller operatively connected to said detector for causing said detector to detect said predetermined signal based on either a specific location or time, said controller being programmed with either the varying locations or the varying timing pattern of said signal.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

Regarding "Location," [s]omeone of ordinary skill in the art would understand that it should be construed to mean "a specific line or lines, or portion of a line in the vertical interval of a television program transmission (as defined above), or a frequency within the audio range of a television program transmission, or other location within a data transmission on a single carrier wave."

Regarding "Timing Pattern," this phrase would be understood by one of ordinary skill in the art to require no special definition. If a definition would be helpful to the jury, someone of ordinary skill in the art would understand that this phrase means "the digital signals in the television program transmission are transmitted in a pattern of timing."

Consistent with the ordinary meaning of "Varying," "Varying Location" should be interpreted

DEFENDANTS' PROPOSED CONSTR.

The term "varying location" means "varying portions of one or more lines of a video transmission in a television program transmission," specifically, "[a] line, or lines, or portions of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission." The varying location is within a single television program transmission, i.e., a single channel, and thus does not encompass changes of the channel or carrier frequency of a specific signal.

The term "varying timing pattern" should be construed in accordance with its ordinary meaning to mean "a plan, diagram, or model of signal timing, which changes."

Post-Hearing: "[V]arying location" means "varying portions of one or more lines of a video transmission in a television program transmission," specifically, a line, or lines, or portions of

to mean that the Location (as defined above) varies, and "Varying Timing Pattern" should be interpreted to mean that the Timing Pattern (as defined above) varies.

Post-Hearing: The terms "varying location or a varying timing pattern" should be construed consistently with the Federal Circuit's decision.

The term "location" should be construed to mean "some part or portion of a television program transmission."

If the Special Master believes that examples would help the jury, the term "location" should be construed to mean "some part or portion of a television program transmission, such as a line, or lines, or portion of a line in the vertical interval of a line-based television program transmission, or a frequency within the audio range of a television program transmission, or the location of a header segment (or other segment) of a packet or the location of the packet itself in a packet-based television program transmission."

The term "varying location" should be construed to mean that the location (as defined above) varies.

The term "timing pattern" should be construed to mean "the digital signals in the television program transmission are transmitted in a pattern of timing."

The term "varying timing pattern" should be construed to mean that the timing pattern (as defined above) varies.

Plaintiffs' Harvey VI Chart at 2-3; Defendants' Harvey VI Chart at 5-9; Joint Summary at 38-39.

The parties urge that the construction of "varying location or a varying timing pattern" should apply to that term as it appears in claims 11 and 24.

a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission. The varying location is within a single television program transmission, *i.e.*, a single channel, and thus does not encompass changes of the channel or carrier frequency of a specific signal.

"[V]arying timing pattern" should be construed in accordance with its ordinary meaning to mean "a plan, diagram, or model of signal timing, which changes."

The plaintiffs contend that their proposed construction of "location" covers locations in an analog television transmission as well as locations in a digital transmission, but that the defendants limit the term to an analog television signal. The plaintiffs contend that their proposed construction is supported by the specification, which broadly discloses digital signals found in locations in digital data transmissions, such as digital broadcast print, digital television, and other data programming transmission. According to the plaintiffs, the 1998 Federal Circuit opinion supports that construction because the examples cited in that case were clearly exemplary and non-limiting, and even the specifically cited examples include locations in digital transmissions. According to the plaintiffs, their construction is supported by special master Harmon and the ITC proceeding. Finally, the plaintiffs point out that some claims recite that the receiver device is "programmed with *** the varying location" while others recite that it is "programmed with information of a varying location." According to the plaintiffs, the former encompasses programming with information sufficient for the signal to be found at its location. Plaintiffs' Opening *Markman* Brief at 58-62.

The defendants contend that the plaintiffs ignore the portion of the Federal Circuit decision holding that Harvey VI involves only single channel transmissions, as well as that portion holding that a data packet identifier, which arrives in an unpredictable order, with unpredictable timing, is information of the composition of the signal, not its location. The defendants contend that the Federal Circuit's decision is clear that location means only "a line, lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission." Location, the defendants urge, does not include packet identifiers or any other location within a data transmission on a single carrier wave. Furthermore, the defendants urge, the Federal Circuit also made clear that "varying timing pattern" does not include packet identifiers. Defendants' Opening *Markman* Brief at 71-72.

b) Discussion

The term "timing pattern" does not seem to be much in issue. The plaintiffs' proposed construction simply recycles the words to be defined, and is thus not helpful. As noted below in connection with construction of the term "decryption pattern," a "pattern" is simply a "plan or model" for doing or making something. *See, e.g.*, MERRIAM-WEBSTER'S ONLINE DICTIONARY.⁷² Thus, the ordinary meaning of "timing pattern" is a plan or model of timing. As the specification explains:

It is a further purpose of this invention to provide a variety of means and methods for restricting the use of transmitted communications to only duly authorized subscribers. Such means and methods *** include techniques whereby the pattern of the composition, timing, and location of embedded signals may vary in such fashions that only receiving apparatus that are preinformed regarding the patterns that obtain at any given time will be able to process the signals correctly.

The present invention employs signals embedded in programming. Embedded signals provide several advantages. They cannot become separated inadvertently from the programming and, thereby, inhibit automatic processing. They occur at precise times in programming and can synchronize the operation of receiver station apparatus to the timing of programming transmissions. They can be conveniently monitored. [Emphasis added.]

Id. at col. 9, lines 37-55. That is, the "timing" is related to when, *i.e.*, what point in time, the signal is embedded in programming. Harvey *et al.* further explain that in connection with the timing of decryption and synchronizing "commands" inserted in "Wall Street Week" programming transmitted to subscribers:

Because no time is required for decrypting, no possibility exists that some station may take longer (or shorter) than proper to perform decrypting causing the image of FIG. 1A to be displayed at some monitor, 202M, longer (or shorter) than proper. Perhaps most important, because no time is required for selective processing of said third command, the time interval that separates the time of embedding said third command at said remote station that originates the "Wall Street Week" program and the time of ceasing caused by said command at URS microcomputers, 205, can be the shortest possible interval. Making it possible for said time interval to be the shortest possible interval minimizes the chance that an error may occur in the timing of the embedding of said third command at said

⁷² <http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=pattern> (last visited June 10, 2004).

remote station causing all URS microcomputers, 205, to cease combining at a time that is other than the proper time.

Id. at col. 88, lines 1-17. Thus, in the context of Harvey VI, a "timing pattern" is the plan or model for when to embed a signal in programming. The ordinary meaning of "varying timing pattern" accordingly would be a plan or model for when to embed a signal in programming that changes.

With respect to the term "location," though, the parties once again appear to dispute what the Federal Circuit actually decided in *Personalized Media*. The Federal Circuit in *Personalized Media*, as was discussed above, commented that "location" included "a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission." 161 F.3d at 707. Again, the Federal Circuit was construing precisely the same term at issue here, and the Federal Circuit's construction must therefore control here, as well. The issue, though, is what, exactly, the Federal Circuit held.

Turning again to *Personalized Media*, the court addressed PMC's arguments on appeal with respect to infringement of claims 6 and 7 thus:

We understand PMC to make two arguments concerning infringement of claims 6 and 7. PMC's first argument is that the ALJ erred in construing the term "location" to preclude selection of a control signal based on selection of a particular carrier wave in a multi-carrier transmission. After considering the claim language and those portions of the specification cited to us by PMC, we disagree with PMC that the ALJ misconstrued the term "location." Without going into unnecessary detail, we note that the term "location" in claims 6 and 7 refers to the position of a control signal within a "television program transmission," and that the specification uses this phrase to denote a single transmission enveloped within a single carrier wave. The specification does not suggest that a "television program transmission" can be a multi-channel transmission, as PMC contends in support of its claim construction. The ALJ correctly construed the term "location" in accordance with the examples provided in the specification, viz., a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission, see '277 patent,

col. 9, l. 61 to col. 10, l. 16,⁷³ examples which involve only single channel transmissions.

PMC's second argument is that the ALJ erred in concluding that the use of SCIDs in the accused DSSs did not infringe claims 6 and 7. We understand this argument not as an attack on the ALJ's claim construction, but rather as an argument that substantial evidence does not support the finding of noninfringement. Specifically, PMC attacks the ALJ's characterization of the SCID as a "composition" and not as having a "location," and asserts that these two characterizations are not mutually exclusive. In other words, PMC contends that even if the SCID constitutes "composition" information, it also has a location within a given channel. The Commission responds that the ALJ's distinction between the terms "composition" and "location" is meaningful and precludes infringement of both claims.

We agree with PMC that substantial evidence does not support the ALJ's conclusion that the accused DSSs do not infringe claim 7,⁷⁴ but disagree with PMC as

⁷³ The example from Harvey IV that the Federal Circuit referred to is from the "Summary of the Invention:"

In programming transmissions, given signals may run and repeat, for periods of time, continuously or at regular intervals. Or they may run only occasionally or only once. They may appear in various and varying locations. In television they may appear on one line in the video portion of the transmission such as line 20 of the vertical interval, or on a portion of one line, or on more than one line, and they will probably lie outside the range of the television picture displayed on a normally tuned television set. In television and radio they may appear in a portion of the audio range that is not normally rendered in a form audible to the human ear. In television audio, they are likely to lie between eight and fifteen kilohertz. In broadcast print and data communications transmissions, the signals may accompany conventional print or data programming in the conventional transmission stream but will include instructions that receiver station apparatus are preprogrammed to process that instruct receiver apparatus to separate the signals from the conventional programming and process them differently. In all cases, signals may convey information in discrete words, transmitted at separate times or in separate locations, that receiver apparatus must assemble in order to receive one complete instruction.

⁷⁴ Claim 6 is reproduced above. For reference, claim 7 calls for:

7. A system for locating or identifying a specific signal in a television program transmission that contains digital information and for assembling information contained in said specific signal, said transmission being separately defined from standard analog video and audio television, said system comprising:

a digital detector for receiving at least some information of said transmission and detecting said specific signal at a specific location or time;

a storage device operatively connected to said digital detector for receiving detected digital information of said specific signal and assembling at least some of said digital information into either information or instruction message units; and

a controller operatively connected to said detector and said storage device for causing said detector to locate, detect or output said signal and for controlling a technique used by said storage device to assemble message units, said controller being programmed with information of the composition of said signal or with either the varying location or the varying timing pattern of said signal. [Emphasis added.]

to claim 6. Like PMC, we find the distinction between the terms "composition" and "location" to be irrelevant to the question whether the SCID can constitute the control signal (i.e., the "predetermined signal" of claim 6 or the "specific signal" of claim 7) of the claims. This was the ALJ's only reason for not finding infringement.⁷⁵ Moreover, the ALJ's rationale that the terms "location" and "com-

⁷⁵ At this point, the court added a footnote:

"The [ALJ] finds that the SCID of the control word packets are information of the 'composition' of a signal, rather than its 'location' as required by claim 6. Thus, the accused DSS system identifies a 'predetermined signal' based on its carrier frequency, and the composition of the predetermined signal." Initial Determination at 228; see also id. at 231-32 (discussing claim 7).

To put that in context, the Commission's report explains at pages 226-229:

Respondents also argued that the [Harvey VI] specification "does clearly state that a signal's 'location' within a transmission may refer to the audio or video portion, to the scan line, or to the place in the audio range. [citation omitted]. It nowhere, however, employs 'location' in a transmission to refer to a signal's carrier frequency."

As the administrative law judge found under claim construction, *** "location" as the word is used in claim 6 would include a line, or lines, or portions of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission. However, he finds that "location" or "varying location" as used in claim 6 of [Harvey VI] does not include a change in "carrier frequency."

The DSS system broadcasts 32 separate frequencies * * *. Thus, the [ALJ] finds that the control word packets of the accused DSS system are transmitted on the same carrier frequency as the video data packets of the associated television program.

Complainants argue that, because the accused DSS receivers identify a control word packet based on [1] the service channel ID (SCID) and [2] the carrier frequency which the control word packet is transmitted on, the control word packet is detected "based on a specific location, as required by claim 6. [The ALJ then recounted respondent's Kepley's testimony.] [Numbering added.]

The [ALJ] finds that the SCID of the control word packets are information of the "composition" of a signal, rather than its "location" as required by claim 6. Thus, the accused DSS system identifies a "predetermined signal" based on its carrier frequency, and the composition of the predetermined signal. [Emphasis added.] The [Harvey VI] specification contains a description of the content of SPAM signals, including header information of SPAM signals. In addition, claim 7 requires a controller programmed with "information of the composition of said signal or with the varying location or the varying timing patterns of said signal." [Emphasis in original.] This language of claim 7 shows that the composition of a signal, such as the SCID in the control word packets of the DSS system, is not the "location" of that signal within the meaning of claim 6. Moreover, the [Harvey VI] specification teaches:

FIG. 2E shows one example of the composition of signal information (excluding bit information required for error detection and correction). The information in FIG. 2E commences with a header which is particular binary information that synchronizes all subscriber station apparatus in the analysis of the information pattern that follows.

[col. 26, lines 37-47; ALJ's emphasis.] Thus, the specification teaches that "header" information is "the composition of signal information" not location. This "header" information is the equivalent of the SCID number in the control word packets of the DSS system. [The ALJ then recounted respondent's Schreiber's testimony.]

position" should be interpreted differently because of the separate use of those terms in claim 7, if anything, suggests that claim 7 is infringed, because that claim encompasses detection of a control signal that is facilitated by a controller that is "programmed with information of the composition of said signal or with either the varying location or the varying timing pattern of said signal." '277 patent, claim 7 (emphasis added). Once the erroneous distinction between "location" and "composition" is removed from consideration, the ALJ's conclusion that claim 7 is not infringed is left without substantial evidentiary support. However, we are not prepared on this record to conclude that this claim is infringed. Claim 7 contains many limitations whose relevance to the accused devices have not been made clear to us. We therefore conclude that the prudent course is not to reverse the finding of no infringement of claim 7, but rather to vacate that decision and remand it for further consideration by the Commission.⁷⁶

Claim 6 presents a different set of facts. Unlike claim 7, the controller of claim 6 is more narrowly drawn to a controller "programmed with either the varying locations or the varying timing pattern of said signal." '277 patent, claim 6. As noted earlier, the controllers in the accused DSSs are programmed with the SCIDs, which are compared with the SCIDs of the incoming data streams to locate a match.⁷⁷ Thus, the controllers are not programmed with the "varying location or timing pattern of said signal"; they are programmed with the signal itself, and therefore do not infringe. We therefore affirm the ALJ's conclusion that claim 6 is not infringed. [Emphasis added.]

Based on the foregoing, the [ALJ] finds that complainant has failed to establish that the accused DSS receivers identify a "predetermined signal" "based on ... a specific location."

⁷⁶ At this point, the court inserted another footnote:

We again acknowledge that the Commission has not yet reviewed the ALJ's conclusions that claim 7 is invalid as anticipated under 35 U.S.C. § 102 and as not enabled under 35 U.S.C. § 112, ¶ 1. It was the Commission's prerogative to review only the questions of indefiniteness and noninfringement, and indeed such an approach "may often save the Commission, the parties and this court substantial unnecessary effort." *Beloit Corp. v. Valmet OY*, 742 F.2d 1421, 1423, 223 USPQ 193, 194 (Fed. Cir. 1984). However, "[l]ike many good things, that approach carries a risk - here the risk of a reversal, and a consequent need for the Commission to revisit one or more portions of the initial determination on which it had taken no position." Id.

⁷⁷ The court inserted yet another footnote here:

"The microprocessor [i.e., controller] will utilize the Program Guide and obtain the transponder frequency and SCID or SCIDs of the channel that the user selected. The microprocessor will program the tuner with the frequency of the desired data stream and then program the transport chip to start filtering for data packets that contain one of those particular SCIDs. The transport chip examines the SCID of every packet and compares it to the SCID or SCIDs of the selected channel. If the SCIDs match, the transport chip will direct the data of that packet to the appropriate place . . . for further processing." Initial Determination at 228 (quoting testimony of Kepley).

Id., 161 F.3d at 707-708. From the foregoing, the most that can be gleaned with respect to claim construction is that the Federal Circuit accepted as correct, but without analysis, the Commission's construction of "location." Additionally, the court apparently did not disagree that the "composition" of something is not the same as its "location" ("Moreover, the ALJ's rationale that the terms "location" and "composition" should be interpreted differently because of the separate use of those terms in claim 7, if anything, suggests * * *."), but the court also agreed that any distinction between the two was "irrelevant to the question of whether the SCID can constitute a control signal." *Id.* at 707.

But it is not clear that the court actually construed the term "location" to mean "a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission." What the Federal Circuit actually said was:

The ALJ correctly construed the term "location" in accordance with the examples provided in the specification, viz., a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission, see '277 patent, col. 9, l. 61 to col. 10, l. 16, examples which involve only single channel transmissions."

Id. Thus, the Federal Circuit deemed the ALJ's construction of location to be consistent with the examples in the specification, namely, "a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission." That is, the "a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission" was a summary of the examples in the specification, and in particular that portion of the specification mentioned in the opinion. While agreeing with the ALJ's construction, the Federal Circuit did not, it seems, articulate what that construction was, but rather noted that it was "correct" and that it was "in accordance" with the examples given in the specification.

The focus thus turns to determining the ALJ's actual construction of "location" was. Turning to the ITC opinion, the ALJ concluded that "the ordinary meaning of the word 'location' in claim 6 would refer to some part or portion of a 'television program transmission'" based on a Webster's dictionary definition.⁷⁸

In issue is the meaning of the claim term "location." Claim 6 requires, inter alia, a predetermined signal "transmitted in a varying location or a varying timing pattern," a digital detector for "detecting said predetermined signal in said transmission based on either a specific location or a specific time;" and a controller "for causing said detector to detect said predetermined signal based on either a specific location or time, said controller being programmed with either the varying locations or the varying timing pattern of said signal," (emphasis added). The word "location" is not expressly defined in claim 6. However, the ordinary meaning of claim 6 would require that the "predetermined signal" is "in" a "varying location" within a "television program transmission." Thus, the administrative law judge finds the ordinary meaning of the word "location" in claim 6

⁷⁸ The ALJ characterized the parties' arguments as follows:

Complainant argued that "varying location" should be interpreted as "varying frequency." (CBr at 27-32). [The ALJ inserted this footnote here. The meaning of "specific time" is not in issue because complainant has not asserted that respondents infringe claim 6 based on any detection of a predetermined signal at a specific time among the varying timing patterns (Williams, Tr. at 548-549, CRBr at 7-9, BRRBr at 9-11, SRBr at 25).] Complainant also argued that "location" as used in claim 6 "includes frequency, such as a carrier frequency or channel." (CRBr at 8).

Respondents argued that "claim 6 uses 'location' in a figurative or metaphorical sense to refer to some characteristic of the signal other than its physical place," and that "the 'specific location' of a signal within a television transmission should be interpreted to refer to the predetermined signal either (a) being embedded alternatively in either the video or the audio portion of the television transmission, (b) when in the video portion, being embedded at a scan line corresponding to a horizontal line on the screen, or (c) when in the audio portion, being embedded at a place in the audio range. In other words, 'location' figuratively refers to a place in terms of the perception space of the video and audio presented to the viewer." (BRBr at 20-21).

The staff argued that "varying locations could mean either varying frequencies or varying positions within the video television signal. More generally, location or time appears to connote a physical or temporal characteristic that allows the particular signal to be found." (SBr at 25). The staff also argued that "a predetermined signal can have a 'location' that is actually a frequency, especially in the case of signals embedded in the audio portion of the television signal at a frequency above the normal human hearing range" and that "a change in carrier frequency does not change the location of the SPAM signals; rather, there can still be an 'unchanging' location for the SPAM signals even if the carrier frequency changes." (SRBr at 6-8).

would refer to some part or portion of a "television program transmission."⁷⁹
[Last emphasis added.]

See ITC Opinion at 84.

The ALJ then reviewed claim 16, and concluded, "based on the language of claim 6 and the language of claim 16, that the phrase 'varying location' in claim 6 would include varying 'portions of one or more lines' of a video transmission in a 'television program transmission.'" *Id.* at 85. The ALJ next turned to the Harvey VI specification, and noted that the specification taught that a signal may be located "in the video portion" and in the "audio portion."

In particular, the ALJ found that "location" in the video portion included "one line" or "a portion of one line" or "more than one line," and that "location" in the audio portion included "eight and fifteen kilohertz."

The term "location" is used in a number of claims in the '277 patent in addition to claim 6. For example, claim 16 reads:

16. A system for locating an embedded instruct-to-decrypt signal out of a plurality of signals embedded in the video of an analog television transmission and enabling a decryptor a decrypt portion of the television transmission, said system comprising:

a line receiver for receiving a video signal of an analog television transmission and selecting portions of one or more lines of said video that contain embedded signals, said line receiver capable of changing the specific portions of said video lines that are selected;

a digital detector operatively connected to said line receiver for receiving said selected portions of video lines that contain the embedded signals, detecting the instruct-to-decrypt signal in said selected portions;

a decryptor operatively connected to said [digital detector] for receiving information on the instruct-to-decrypt signal from said detector and decrypting a portion of said transmission in response to receiving said information; and

⁷⁹ The ALJ noted a dictionary definition in a footnote:

The dictionary definition of location is "2 a: a position or site occupied or available for occupancy (as by a building) or marked by some distinguishing feature <a sheltered ~> <much of the charm of the house was in its ~> <discovered the ~ of the hiding place>." Webster's, at 1328.

a controller operatively connected to said line receiver for causing said line receiver to change the specific portions of video selected by said line receiver on the basis of a varying location or timing pattern of the signals in the transmission, said controller having access to information on the varying location or timing pattern of the signals in the transmission.

(CX 2 at col. 315, lns. 20-48)(emphasis added). Hence, claim 16 refers to a line receiver "selecting portions of one or more lines of said video that contain embedded signals" and thereafter refers to "specific portions of video" being selected "on the basis of a varying location . . . of the signals in the transmission . . ." It also defines "portions of one or more lines" of a video transmission as the "location" of an embedded signal, which "location may vary. Accordingly, the administrative law judge finds, based on the language of claim 6 and the language of claim 16, that the phrase "varying location" in claim 6 would include varying "portions" of one or more lines" of a video transmission in a "television program transmission."

Referring to the specification of the '277 patent, it contains the following description of signals that "may appear in various and varying location:"

In programming transmissions, given signals may run and repeat, for periods of time, continuously or at regular intervals. Or they may run only occasionally or only once. They may appear in various and varying locations. In television they may appear on one line in the video portion of the transmission such as line 20 of the vertical interval, or on a portion of one line, or on more than one line, and they will probably lie outside the range of the television picture displayed on a normally tuned television set. In television and radio they may appear in a portion of the audio range that is not normally rendered in a form audible to the human ear. In television audio, they are likely to lie between eight and fifteen kilohertz. In broadcast print and data communications transmissions, the signals may accompany conventional print or data programming in the conventional transmission stream but will include instructions that receiver station apparatus are preprogrammed to process that instruct receiver apparatus to separate the signals from the conventional programming and process them differently. In all cases, signals may convey information in discrete words, transmitted at separate times or in separate locations, that receiver apparatus must assemble in order to receive one complete instruction.

(CX 2, col. 9, In. 61 - col. 10, In. 16) (emphasis added). In addition, the specification contains the following description of the "location" of SPAM signals embedded in a television program transmission:

SPAM signals can be embedded in many different locations in electronic transmissions. In television, SPAM signals can be embedded in the video portion or in the audio portion of the transmission. In the video portion,

SPAM signals can be embedded in each frame on one line such as line 20 of the vertical interval, or on a portion of one line, or on more than one line, and they will probably lie outside the range of the television picture displayed on a normally tuned television set. SPAM signals can be embedded in radio audio transmissions. In the audio of television and radio transmissions, SPAM signals will probably be embedded in a portion of the audio range that is not normally rendered in a form audible to the human ear. In television audio, they are likely to lie between eight and fifteen kilohertz. In broadcast print and data communications transmissions, SPAM signals can accompany conventional print or data programming in the conventional transmission stream.

(CX 2, col. 48, ln. 52 - col. 49, ln. 2)(emphasis added). That portion of the specification teaches that a signal "in the video portion" is in a "location" and a signal "in the audio portion" is in a differing location, with "one line" or "a portion of one line" or "more than one line" being examples of a signal's "location" within the video portion, and "eight and fifteen kilohertz" being an example of a "location" within the audio portion of a television transmission. The '277 specification also teaches that a "normal transmission location" of a signal in television program transmission: [sic]

In television, the normal transmission location of the preferred embodiment is in the vertical interval of each frame of the television video transmission. Said location begins at the first detectable part of line 20 of the vertical interval and continues to the last detectable part of the last line of the vertical interval that is not visible on a normally tuned television set.

(CX2 at col. 49, lns. 3-9)(emphasis added). Thus, the specification teaches that "one line such as line 20 of the vertical interval, or on a portion of one line, or on more than one line" is a potential "location" of a SPAM signal in a television program transmission (emphasis added). In addition, the '277 specification uses the term "location" to refer to at least an audio frequency range within a television program transmission. Specifically, the specification teaches that "[i]n the audio of television and radio transmission, SPAM signals will probably be embedded in a portion of the audio range that is not normally rendered in a form audible to the human ear. In television audio, they are likely to lie between eight and fifteen kilohertz." As "kilohertz" is a measurement of frequency, see e.g., McGraw hill Dictionary of Scientific and Technical Terms at 880, the administrative law judge finds that this is a teaching in the specification that a SPAM signal's location can include its frequency within the audio range of a television

transmission.⁸⁰ Accordingly, the administrative law judge finds, based on the '277 specification, and the language of other claim [sic] of the '277 specification that "location" as the word is used in claim 6 would include a line, or lines, or portions of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission.

Id. at 85-88. Thus, in the end, the ALJ concluded that "location" as the word is used in claim 6 would include a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission."

The administrative law judge finds, based on the '277 specification, and the language of other claims of the '277 specification that "location" as the word is used in claim 6 would include a line, or lines, or portions of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission.

The administrative law judge finds that the prosecution history of the '277 patent does not contain any discussion of the phrase "based on a specific location. . ." Moreover he finds extrinsic evidence unnecessary to understanding the meaning of the phrase "based on a specific location. . ." [Emphasis added.]

Id. at 88. The ALJ's construction of "location" was actually "some part or portion of a 'television program transmission,'" and thus "would include" a line, or lines, or portions of a line in the vertical interval, or a frequency within the audio range of a television transmission.

⁸⁰ The ALJ added the following footnote:

The '277 patent contains the following regarding detecting information in a radio transmission:

Said radio-detection-complete information causes controller, 20, to cause oscillator, 6, to cause the selection of the next frequency in the predetermined radio frequency selection pattern: 99.0 MHz. Automatically oscillator, 6, causes mixer, 2, to select said frequency and input it, at a fixed frequency, to decoder, 40. Controller, 20, then transmits a particular preprogrammed radio-99.0 instruction to control processor, 44J, that informs said processor, 44J, 99.0 MHz is inputted to decoder, 40.

Receiving said radio-99.0 instruction causes control processor, 44J, to cause all apparatus to decoder, 40, to commence receiving, detecting, and processing SPAM message information embedded in the inputted frequency of interest.

However, claim 6 is directed to identifying a predetermined signal in a television program transmission. Accordingly, the administrative law judge finds that the system of claim 6 would not read on a system for identifying a predetermined signal in a radio transmission.

In deciding infringement, the ALJ concluded that “[a]s the [ALJ] found under claim construction *** ‘location’ as the word is used in claim 6 would include a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission.” *Id.* at 226-27. But it also appears that the ALJ’s infringement outcome would have been the same regardless of what construction of “location” was used, because the ALJ relied on a distinction between “location” and “composition.” It was that finding, rather than the claim construction of “location,” that PMC attacked on appeal before the Federal Circuit. As noted above, the Federal Circuit disagreed with the ALJ’s “location” versus “composition” distinction.

In sum, it is not clear that the Federal Circuit actually adopted “a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission” as the ALJ’s construction. What is clear is that the Federal Circuit approved of the ALJ’s construction in light of the examples in the specification: It is also clear from the foregoing that the ALJ concluded that those examples fell within the ALJ’s actual construction of the word “location.” Nothing in the ALJ’s analysis, though, suggests that the ALJ (or the Federal Circuit) limited “location” to “a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission.” Thus, consistent with the ALJ’s actual construction, a “location” is simply some part or portion of a “television program transmission,” and includes a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission.

Defendants also urge that a “varying location” does not encompass changes of the channel or carrier frequency of a specific signal. Based on the foregoing, and the construction of “television program transmission” above, namely, a “single transmission enveloped within a single carrier wave” that is “not limited to analog transmission, nor is it limited to a single program or service,” the defendants’ argument has merit at least as that term is used in claim 6. That is, claim 6 says that the location is a “part” of the “television program transmission.” A “varying location” means that the “part” changes, not the “television program transmission” itself.⁸¹ That is, the change is relative to

⁸¹ The ALJ’s reasoning is persuasive:

Complainant argued that “location” can also include the carrier frequency of a predetermined signal (CRBr at 8), and that a signal transmitted in a varying carrier frequency is transmitted in a “varying lo-

cation" in a television program transmission. (CB at 27-32). Complainant also argued that "the word 'transmission' as used in [claim 6] therefore includes a portion of what was transmitted, even if that portion has been demodulated down to some type of baseband signal." (CRBr at 7). The administrative law judge finds that those arguments are not supported by the '277 patent specification.

As found *supra*, the specification does contain a teaching that frequency can be a "location" of a predetermined signal. However, the specification also teaches that this usage of "frequency" is distinct from the "carrier frequency" or "channel" of a given program.

The plain language of claim 6 requires "a predetermined signal in a television program transmission" with said "predetermined signal" being transmitted in a varying location within that transmission, and being detected based on its specific location within that transmission. Thus, the administrative law judge finds that claim 6 is directed to a single "television program transmission" not multiple transmissions. Moreover, this plain language of claim 6 is supported by the language of the specification, which teaches that "SPAM signals can be embedded in many different locations in electronic transmissions." (CX 2, col. 48, lns. 52-53).

Complainant relies on one example set forth in the '277 patent that teaches embedding a "predetermined signal" (in this example a "SPAM message") containing a recipe and instructions related to "Exotic Meals of India" programming in a "particular second transmission that is different from the transmission of said 'Exotic Meals of India' programming . . ."⁸¹ as evidence that a signal's "location" includes its carrier frequency. That "Exotic Meals of India" example deals with SPAM signals embedded on one carrier frequency that are related to a television program transmitted on another carrier frequency. The specification first states, in the "Exotic Meals of India" programming example, that:

One benefit of this method of transmitting the information of said generate-recipe-and-shopping-list instructions is that by causing said instructions to be embedded in the transmission of said "Exotic Meals of India" programming this method enables any subscriber who records the transmission of said programming at a recorder/player, 217, to access the embedded information of said instructions automatically in this fashion whenever the recorded transmission of said programming is played back--and in so doing, to cause the signal processor, 200, of his station to process meter-monitor information of said embedded first and second messages anew whenever TV567# is entered at a local input, 225, in the course of the play back of said transmission. However, this method has the drawback of making the information of said instructions relatively vulnerable to programming pirates (who may be able to manipulate and extract said information relatively easily without causing meter information to be transmitted to remote metering stations) because the embedded location of said instructions is relatively easy to find.

(CX 2, col. 265, lns. 38-58) (emphasis added). The example later states:

This method has the advantage of making the information of said instructions relatively invulnerable to programming pirates because the location of said instructions [more precisely, the particular transmission in which said instructions are embedded] is harder to identify without causing meter information [if only of said first message] to be transmitted to remote metering stations.

(CX 2 at col. 266, lns. 24-31) (emphasis added). The administrative law judge finds that this part of the specification explicitly acknowledges that a change in the carrier frequency that a signal is embedded in, rather than a change in "location," is "more precisely" a change in "the particular transmission" that the SPAM signal is embedded in. Hence, detecting a predetermined signal based on a specific transmission, i.e. carrier frequency, is found by the administrative law judge to be not consistent with the language of claim 6 which requires the digital detector to detect "said predetermined signal in said transmission based on either a specific location or a specific time" (emphasis added). In contrast,

complainant's [sic] would rewrite the claim beyond the claim's expert language to require a detector that identifies a predetermined signal in one of many television program transmissions, based on either a specific location or a specific transmission.

The distinction between "location" and "channel" or "carrier frequency" is further illustrated in other portions of the '277 specification's discussion of the "normal transmission location" of a SPAM signal. Thus, the specification describes an "unchanging location" for the transmission of SPAM command information as follows:

In the preferred embodiment, while receiver station decoder apparatus may be controlled, in fashions described below, to detect information segment information outside the normal transmission locations, SPAM commands and cadence information are always transmitted in normal transmission locations. In the present invention, the object of many decoders is to detect only command information such as meter-monitor segment information. Having one unchanging location for the transmission of command information in any given television, radio, broadcast print, or data transmission permits decoder apparatus to search just one unchanging portion of said transmission to detect commands. Having the same fixed location for cadence information enables said decoder apparatus to distinguish all command information in said transmission.

(CX 2, col. 49, lns. 31-46) (emphasis added). The administrative law judge finds that this portion of the specification refers to a "preferred embodiment" having "one unchanging location for the transmission of command information in any given television . . . transmission." He further finds that the '277 specification teaches that this allows the decoder to search one location within each transmission. The administrative law judge also finds that this shows the distinction between a change in transmission and a change in location within a transmission. Similarly, the specification teaches an example wherein:

the subscriber station of FIG. 1 is in New York City and is tuned to the conventional broadcast television transmission frequency of channel 13 at 8:30 PM on a Friday evening when the broadcast station of said frequency, WNET, commences transmitting a television program about stock market investing, "Wall Street Week." . . .

* * *

... Decoder, 203, is preprogrammed to detect digital information on a particular line or lines (such as line 20) of the vertical interval of its video transmission input; to correct errors in said information; to convert said corrected information into digital signals usable by microcomputer, 205; and to input said signals to microcomputer, 205, at its asynchronous communications adapter.

* * *

At said program originating studio, at the outset of said program transmission, a first series of control instructions is generated, embedded sequentially on said line or lines of the vertical interval, and transmitted on the first and each successive frame of said television program transmission, signal unit by signal unit and word by word, until said series has been transmitted in full.

(CX 2, col. 13, ln. 38 – col. 14, ln. 31) (emphasis added). In the foregoing example, the specification describes a single "conventional broadcast television transmission frequency of channel 13" transmitting a single television program as "said television program transmission" and illustrates "Decoder, 203, is preprogrammed to detect digital information on a particular line or lines (such as line 20) of the vertical interval of its video transmission input" and thus teaches the detection of a signal based

the "television program transmission." In other words, even if the "television program transmission" changed, e.g., the carrier frequency is changed, the "location" of the signal would not have changed with reference to the transmission. For example, Harvey *et al.* distinguished between changing the program transmission and changing the location of a signal embedded in the program transmission:

One benefit of this method of transmitting the information of said generate-recipe-and-shopping-list instructions is that by causing said instructions to be embedded in the transmission of said "Exotic Meals of India" programming this method enables any subscriber who records the transmission of said programming at a recorder/player, 217, to access the embedded information of said instructions automatically in this fashion whenever the recorded transmission of said programming is played back--and in so doing, to cause the signal processor, 200, of his station to process meter-monitor information of said embedded first and second messages anew whenever TV567# is entered at a local input, 225, in the course of the play back of said transmission.

Harvey VI, col. 265, lines 38-51. Harvey *et al.* explained that the instruction signal was embedded in a fixed location in the programming, so that even if the viewer records the program for later viewing, that viewer still sees the option to obtain the recipe. That, however, posed a security risk:

However, this method has the drawback of making the information of said instructions relatively vulnerable to programming pirates (who may be able to manipulate and extract said information relatively easily without causing meter information to be transmitted to remote metering stations) because the embedded location of said instructions is relatively easy to find.

Id. at lines 52-58. To remedy that, Harvey *et al.* proposed changing the program transmission, i.e., by having two programming transmissions, each with embedded signals that when detected and coordinated, allowed proper use of the embedded information:

This method has the advantage of making the information of said instructions relatively invulnerable to programming pirates because the location of said in-

on a "location" i.e. "a particular line or lines (such as line 20) of the vertical interval of its video transmission input" of a single television program transmission.

Based on the foregoing, the administrative law judge rejects complainant's argument that a change in carrier frequency is a change in the "location" of the "predetermined signal" as inconsistent with the plain language of claim 6, as well as the '277 specification.

structions [more precisely, the particular transmission in which said instructions are embedded] is harder to identify without causing meter information [if only of said first message] to be transmitted to remote metering stations.

Id. at col. 266, lines 24-31. Changing the transmission is not the same as changing a "location" within a transmission. Again, claim 6 calls for a "varying location" within a transmission, not changing location by changing transmission. As the foregoing example suggests, those are two different things. To further emphasize that, the various examples of "location" in the specification, e.g., "a line, or lines, or portion of a line in the vertical interval of a television video transmission, or a frequency within the audio range of a television transmission," may vary within a transmission. For example:

In programming transmissions, given signals may run and repeat, for periods of time, continuously or at regular intervals. Or they may run only occasionally or only once. They may appear in various and varying locations. In television they may appear on one line in the video portion of the transmission such as line 20 of the vertical interval, or on a portion of one line, or on more than one line, and they will probably lie outside the range of the television picture displayed on a normally tuned television set. In television and radio they may appear in a portion of the audio range that is not normally rendered in a form audible to the human ear. In television audio, they are likely to lie between eight and fifteen kilohertz. In broadcast print and data communications transmissions, the signals may accompany conventional print or data programming in the conventional transmission stream but will include instructions that receiver station apparatus are preprogrammed to process that instruct receiver apparatus to separate the signals from the conventional programming and process them differently. In all cases, signals may convey information in discrete words, transmitted at separate times or in separate locations, that receiver apparatus must assemble in order to receive one complete instruction. [Emphasis added.]

Id. at col. 9, line 61 to col. 10, line 16. Thus, with respect to claim 6 (and claim 7), the defendants appear to be correct with respect to changes in the "carrier frequency." As for changes of the "channel," as discussed above, a "television program transmission" has been construed as a single-channel transmission, and so the same would hold true. That is not to say, though, that a change in program might not be a change in "location," because, again, as discussed above, the single-channel "television program transmission" is not limited to a single program or service.

Beyond that, though, the technical nature of the proposed constructions here go well beyond even the broadest connotation of "location," and implicate particular digital technology, namely, packet-based television transmission. As noted above, a "television program transmission" was construed to mean a single transmission enveloped within a single carrier wave. That term is not limited to analog transmission, nor is it limited to a single program or service. The preamble of claim 6 provides:

A system for identifying a predetermined signal in a television program transmission in which a plurality of signal types are transmitted said signal being transmitted in a varying location or a varying timing pattern, said television program transmission being separately defined from standard analog video and audio television, said system comprising ***

That is, claim 6 describes a signal that is transmitted in the "television program transmission," i.e., the single transmission enveloped within a single carrier wave, "in a varying location or a varying timing pattern." Thus, "location" refers to a location in the "television program transmission." The Federal Circuit did not, as the plaintiffs propose, distinguish "line-based" or "packet-based" television, or otherwise address the same. Again, the term "television program transmission" was accorded its broad connotation. However, to decide at the claim construction stage that the claims, as construed above, exclude by definition certain specific technologies goes beyond what the special master was appointed to do. The task at hand is to determine the proper construction of disputed claim terms, which oftentimes differs from either parties' proposed constructions. The task is not, however, to construe claims to avoid certain technology. Again, the claims are construed without reference to the accused device or process. Ultimately, the parties' proposed constructions prematurely pose issues that are better suited to the factual inquiry that an infringement analysis entails. It is not, for example, the role here to decide whether a packet is or is not at a "location" in a "television program transmission," as those terms have been defined.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

A "location" is some part or portion of a "television program transmission." A "varying location" is some part or portion of a "television program transmission"

that changes, but does not include changing the channel or carrier frequency. A "timing pattern" is the plan or model for when to embed a signal in programming. A "varying timing pattern" is a plan or model for when to embed a signal in programming that changes.

5. **“television program transmission being separately defined from standard analog video and audio television” & “not a standard television signal”**

The disputed terms appear in claim 6, and appear in similar form in claims 7, 8, and 10.

Claim 6 is selected as representative, and is reproduced below for reference, with the disputed term in boldface:

6. A system for identifying a predetermined signal in a television program transmission in which a plurality of signal types are transmitted said signal being transmitted in a varying location or a varying timing pattern, **said television program transmission being separately defined from standard analog video and audio television**, said system comprising: * * * *

7. A system for locating or identifying a specific signal in a television program transmission that contains digital information and for assembling information contained in said specific signal, **said transmission being separately defined from standard analog video and audio television**, said system comprising:
* * * *

8. A television receiver system comprising:

a filter * * *;

* * *;

a second digital detector for receiving information of a selected television program transmission that is **separately defined from standard analog television**, said second digital detector detecting a second digital signal in said separately defined television program transmission; * * * *

10. A television receiver system comprising:

a receiver for receiving a selected portion of a television program transmission that is **not a standard television signal**; * * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[A] television program transmission that is something other than a standard analog video and audio television transmission, even one that has digital information embedded thereon, [and] includes digital television transmissions.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

The term "separately defined from standard analog video and audio television" requires a single channel transmission including, not only standard analog video and audio television programming transmissions, but also a third transmission (within the channel) other than the standard analog video and audio transmissions of the channel, [and] should be construed to exclude a multi-program (channel) digital television transmission as an example of a "separately defined" transmission.

Post-Hearing: The phrase "separately defined from standard analog video and audio television" should be construed to mean "a television program transmission other than a standard analog television program transmission as defined by, for example, the National Television Standards Committee (NTSC). [This phrase] should be construed to exclude a multi-program (channel) digital television transmission as an example of a 'separately defined' transmission."

Plaintiffs' Harvey VI Chart at 2; Defendants' Harvey VI Chart at 9 & 12; Joint Summary at 40-41.

The parties urge that the construction of "television program transmission being separately defined from standard analog video and audio television" should apply to that term as it appears in claim 8. The parties further urge that the construction should also generally apply to the term "not a standard television signal" as it appears in claim 10.

The plaintiffs contend that the term "separately defined" means "other than," such that the television program transmission is other than, or different from, a standard analog television transmission. According to the plaintiffs, "other" television program transmissions include digital television program transmissions. The plaintiffs contend that their interpretation of the disputed term is supported by special master Harmon's construction as well. According to the plaintiffs, the defendants' construction of "separately defined" requires a standard analog transmission plus yet another separate undefined transmission, which contradicts the claim language by including what the claim

expressly excludes, *i.e.*, standard analog television. If the defendants' construction was accepted, the plaintiffs urge, the claim would only relate to a "super" transmission of a conventional analog television transmission plus a digital television transmission — "an unlikely scenario highlighting the absurdity of their construction." According to the plaintiffs, the defendants' own expert, Dr. Rhyne, was unwilling to support the defendants' construction and, on the contrary, actually indicated that he agreed with the plaintiffs' expert, Dr. Bovik. Plaintiffs' Opening *Markman* Brief at 55-58.

According to the defendants, though, "PMC failed to demonstrate [that] the term 'separately defined from standard analog video and audio television' should be construed to include a modern multi-program (channel) digital television transmission." The defendants urge that "PMC's reliance on Dr. Bovik must fail in light of the patentees' own use of the term 'channel' to refer to a single channel for broadcasting one television program at a time and the Federal Circuit's use of the term 'channel' in exactly that manner." The defendants further contend that "Mr. Astle's similarly conclusory statements also fail to demonstrate that digital television in a format unknown in 1987 should be included within the term 'separately defined' as used in the patent." Defendants' Post-Hearing *Markman* Brief at 20.

b) Discussion

The parties do not dispute what "standard" television is, or that a television "standard" exists. As discussed above, the NTSC, used in the United States, has provided an analog television standard;⁸² PAL and SECAM are two other standards.⁸³ See *Markman* Tr. at 201:16 to 202:2. Further, the parties do not dispute what technology may or may not be part of such a standard. The dispute, rather, concerns what is not "standard" television, or what is separately defined from "standard" television.

Thus, the parties do not dispute the dividing line between what is and what is not "standard" television. On the one hand, then, is "standard" television (as embodied, for example, in NTSC, PAL and SECAM standards), and on the other is everything that is not "standard" or is "separately

⁸² See <http://www.ntsc-tv.com/ntsc-index-01.htm> (last visited June 10, 2004); <http://www.webopedia.com/TERM/N/NTSC.html> (last visited June 10, 2004).

defined." There is no "third" category in which something is neither "standard" nor "non-standard." Again, that is not in dispute.

The parties apparently agree that a multi-channel digital television transmission is not "standard."⁸³ The defendants, though, seek to exclude that digital transmission technology from the "not standard" category, as well. The defendants, however, have presented no persuasive reasoning for doing so.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

In claim 6, the phrase "television program transmission being separately defined from standard analog video and audio television" means a television program transmission that is something other than a standard analog video and audio television transmission. Similar phrases in claims 7, 8 and 10 should be construed consistently.

6. **"detecting said predetermined signal in said transmission based on either a specific location or a specific time"**

This limitation appears in claim 6, but also appears in claims 7 and 11 in similar form. Claim 6 is reproduced below for reference, with the disputed limitation in boldface:

6. A system for identifying a predetermined signal in a television program transmission in which a plurality of signal types are transmitted said signal being transmitted in a varying location or a varying timing pattern, said television program transmission being separately defined from standard analog video and audio television, said system comprising:

a digital detector for receiving said transmission and detecting said predetermined signal in said transmission **based on either a specific location or a specific time;** and ***

⁸³ See <http://www.alkenmrs.com/video/standards.html> (last visited June 10, 2004); <http://en.wikipedia.org/wiki/PAL> (last visited June 10, 2004); <http://en.wikipedia.org/wiki/SECAM> (last visited June 10, 2004).

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[T]his phrase consists largely of common English words which require no specific definition, and which may simply [be] read to the jury.

"Specific Location or Time" should be construed consistently with the manner in which the terms Location and Timing Pattern have been construed above for "Varying Location or the Varying Timing Pattern"

With respect to "Specific Location," this portion of this element should be given its ordinary meaning, which to someone of ordinary skill in the art is that "the signal should be detected at a specific location."

Similarly, with respect to "Specific Time," this portion of this element should also be given its ordinary meaning to mean that "the signal should be detected at a specific time."

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 17-18; Defendants' Harvey VI Chart at 12-13; Joint Summary at 41.

According to the JCCS, the parties agree that "detecting" should mean "discovering or determining the existence, presence, or fact of." JCCS at 10.

PMC/Gemstar urge that the construction of "detecting said predetermined signal in said transmission based on either a specific location or a specific time" should apply to that term as it appears in claims 7, 11 and 12.

Defendants urge that detecting "said predetermined signal" based on either "a specific location" or "specific time" necessarily excludes identification of signal information on a basis other than location or time, such as through the detection of packet identifiers. Defendants' Opening *Markman* Brief at 72-73.

DEFENDANTS' PROPOSED CONSTR.

As agreed by PMC/Gemstar, the term "detecting" means "to discover or determine the existence, presence, or fact of." Thus, the term "detecting said predetermined signal in said transmission based on either a specific location or a specific time" means "to discover or determine the existence, presence or fact of a predetermined signal in the television program transmission utilizing information of specifically when or where in the transmission the signal is expected to occur." Detection of a specific signal based on a "specific location or time" excludes identification of signal information on a basis other than location or time, such as through the detection of packet labels (e.g., PIDs of an MPEG-2 transport stream).

Post-Hearing: [no change]

b) Discussion

The principal dispute is whether detecting "said predetermined signal" based on either "a specific location" or "specific time" necessarily excludes identification of signal information on a basis other than location or time, such as through the detection of packet identifiers. It does not. The claim simply requires "detecting *** based on either a specific location or a specific time." Detecting based on packet identifiers may not take the place of detection based on specific location or specific time, but the claim does not prohibit other not-called-for bases of detection. In other words, the claim does not prohibit detection on other bases in addition to "specific location" or "specific time." The defendants' argument must be rejected.

Otherwise, the claim is readily understandable and requires no further construction. The terms "location" and "time" should be construed as discussed above in connection with construction of the term "varying location or a timing pattern" above.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

In claim 6, the phrase "detecting *** based on a specific location or a specific time" does not preclude detecting based on factors other than location or time. Similar terms in claims 7 and 11 should be construed consistently.

7. "programmed with either the varying locations or the varying timing pattern of said signal," "programmed *** with either the varying location or the varying timing pattern of said signal" & "programmed with information of a varying location or timing pattern"

The disputed terms appear in claims 6, 7 and 11. Claim 6 is selected as representative, and is reproduced below for reference, with the disputed term in boldface:

6. A system for identifying a predetermined signal in a television program transmission in which a plurality of signal types are transmitted said signal being transmitted in a varying location or a varying timing pattern, said television program transmission being separately defined from standard analog video and audio television, said system comprising:

a digital detector ***; and

a controller operatively connected to said detector for causing said detector to detect said predetermined signal based on either a specific location or time, said controller being programmed with either the varying locations or the varying timing pattern of said signal.

7. A system for locating or identifying a specific signal in a television program transmission ***, said system comprising:

a digital detector ***;

a storage device operatively connected to said digital detector ***; and

a controller operatively connected to said detector and said storage device for causing said detector to locate, detect or output said signal and for controlling a technique used by said storage device to assemble message units, said controller being programmed with information of the composition of said signal or with either the varying location or the varying timing pattern of said signal.

11. A television receiver system comprising:

a first processor for receiving information of a selected television program transmission and detecting a specific signal in said transmission based upon a location or timing pattern of said specific signal in said transmission, said first processor being programmed with information of a varying location or timing pattern;

a second processor operatively connected to said first processor ***.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Controller" [has] a common, ordinary meaning in this art, which is "a processor, or a processor-based device such as a microcomputer or microcontroller, that controls the functions of other components of the system."

[The term "programmed with either the varying locations or the varying timing pattern of said signal" should be construed as in claim 7, below]

Post-Hearing: The phrase "programmed with either the varying locations or the varying timing pattern of said signal" should be construed according to its two parts to mean "the controller is programmed with information regarding the varying locations (as defined above) at which the signal can be found" or "the controller is programmed with information regarding the varying timing pattern (as defined above) of the signal."

The phrase "programmed with *information of* a varying location or timing pattern" should be construed to mean that "the controller is programmed with *information of* a varying location (as defined above)" or "the controller is programmed with *information of* a timing pattern (as defined above). [Plaintiffs' emphasis.]

Plaintiffs' Harvey VI Chart at 18-19; Defendants' Harvey VI Chart at 14; Joint Summary at 68-69.

The parties urge that the construction of "controller * * * programmed with either the varying locations or the varying timing pattern of said signal" should apply to that term as it appears in claims 7 and 18. PMC/Gemstar further applies that construction to claims 8, 10, 11, 13, 16.

According to the JCCS, the parties agree that "controller" means "a processor or processor-based device that controls the functions of other components of the system." JCCS at 10.

The parties do not otherwise address these terms in their respective *Markman* briefs.

DEFENDANTS' PROPOSED CONSTR.

The term "controller . . . programmed with either the varying locations or the varying timing pattern of said signal" should be construed to mean a controller that has been provided with coded instructions that provide or preinform it with the varying locations, or the varying timing pattern, of the predetermined signal to be detected by the digital detector.

Post-Hearing: "[This term]" requires no construction.

b) Discussion

It is not clear that these terms, which are readily understandable, are actually in dispute. In any case, addressing the plaintiffs' proposed constructions, the plaintiffs propose that the phrase "programmed with either the varying locations or varying timing pattern of said signal" means "the controller is programmed with information regarding the varying locations (as defined above) at which the signal can be found" or "the controller is programmed with information regarding the varying timing pattern (as defined above) of the signal." The plaintiffs appear to change the words "with either the varying locations" to "with information regarding the varying locations." One perhaps cannot literally program a controller or processor with a "location" *per se*, but one can provide an indication of or reference to a location – and it seems that is clear enough from the plain language of the claim. But that is not the same as saying "information regarding a location," which is another way of saying information about a location. The claim requires something more specific, and the plaintiffs' proposed construction appears to impermissibly broaden the claim.

On the other hand, the words "information of * * *," as called for in claims 7 and 11, carry a connotation closer to what the plaintiffs urge for claim 6. In all, though, and once again, the claims appear to be readily understandable, and given the lack of any apparent dispute between the parties or any suggestion of ambiguity or lack of clarity in the claims, the special master is of the view that this term does not require any "construction."

c) Recommended Construction

These limitations do not require construction.

8. "storage device operatively connected to said digital detector for receiving detected digital information of said specific signal and assembling at least some of said digital information into either information or instruction message units"

This phrase appears in claim 7 (the disputed phrase is in boldface):

7. A system for locating or identifying a specific signal in a television program transmission that contains digital information and for assembling information

contained in said specific signal, said transmission being separately defined from standard analog video and audio television, said system comprising:

a digital detector for receiving at least some information of said transmission and detecting said specific signal at a specific location or time;

a storage device operatively connected to said digital detector for receiving detected digital information of said specific signal and assembling at least some of said digital information into either information or instruction message units; and

a controller operatively connected to said detector and said storage device for causing said detector to locate, detect or output said signal and for controlling a technique used by said storage device to assemble message units, said controller being programmed with information of the composition of said signal or with either the varying location or the varying timing pattern of said signal.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Storage Device" should be given its ordinary meaning which is "a computer memory (e.g., buffer, ROM, RAM, register, floppy disk) or a recorder (e.g., VCR or DVD)."

The entire phrase "Storage Device . . . For . . . Assembling at Least Some of Said Digital Information into Either Information or Instruction Message Units" would be understood by one of ordinary skill, in the context of this claim, to mean "the memory at which the message units are assembled under the control of the controller."

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

A memory that can store digital information and which "is required to 'take possession or delivery of' or 'to take in' the 'detected digital information' of a 'specific signal,' and that the claimed 'storage device' must also 'put or join together' in 'an orderly way with logical selection or sequence' the 'detected digital information' to form either an 'information or instruction message unit.'

Post-Hearing: The term "storage device * * *" requires no construction.

To the extent that "storage device" may be deemed to require construction, it should be construed to mean a memory. It does not require the surplus language proposed by PMC. The remainder of this phrase consists of common English words and may simply be read to the jury.

Plaintiffs' Harvey VI Chart at 24; Defendants' Harvey VI Chart at 18; Joint Summary at 64.

The parties urge that the construction of "storage device * * *" should apply to that term as it appears in claim 10.

b) Discussion

The term "storage" was construed to mean a "device in which information can be stored" in connection with construction of the term "storage means" above in Harvey IV. That construction applies here.

As for the plaintiffs' proposed construction of "storage device *** for *** assembling at least some of said digital information into either information or instruction message units" to mean "the memory at which the message units are assembled under the control of the controller," that is what the claim calls for and is thus unnecessary to reiterate:

a storage device operatively connected to said digital detector for receiving detected digital information of said specific signal and assembling at least some of said digital information into either information or instruction message units; and

a controller operatively connected to said detector and said storage device for causing said detector to locate, detect or output said signal and for controlling a technique used by said storage device to assemble message units, said controller being programmed with information of the composition of said signal or with either the varying location or the varying timing pattern of said signal.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

A "storage device" is a device in which information can be stored.

9. "programmed with information of the composition of said signal"

The disputed term appears in claim 7, which is reproduced below for reference, with the disputed term in boldface:

7. A system for locating or identifying a specific signal in a television program transmission ***, said system comprising:

a digital detector ***;

a storage device operatively connected to said digital detector ***; and

a controller operatively connected to said detector and said storage device for causing said detector to locate, detect or output said signal and for controlling a technique used by said storage device to assemble message units, said controller being programmed with information of the composition of said signal or with either the varying location or the varying timing pattern of said signal.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

The phrase "programmed with information of the composition of said signal" should be interpreted to mean that "the controller is programmed with information describing the content or format of the signal, such as a header identifier or other field in the specific signal, so that it can be detected."

DEFENDANTS' PROPOSED CONSTR.

[not addressed]

Post-Hearing: This term does not require construction.

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 31-32; Joint Summary at 42.

b) Discussion

It is not clear that this term, which is readily understandable, is actually in dispute. In any case, the plaintiffs are generally correct that the "composition of said signal" describes the content and format of the signal. For example, Harvey *et al.* explain that "FIG. 2E illustrates one example of the composition of signal information and shows the initial binary information of a message that contains execution, meter-monitor, and information segments." *Id.* at col. 11, lines 54-57.

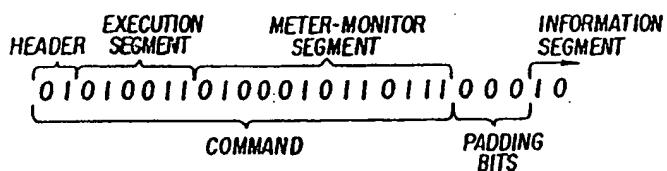


FIG. 2E

It is not clear, though, that the term necessarily connotes the purpose of "so that [the signal] can be identified." In claim 6, at least, that is the purpose, but, again, the plain claim language carries that connotation, not the phrase at issue *per se*.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

In the phrase "programmed with information of the composition of said signal," the "composition of said signal" refers to the content or format of the signal.

10. "television receiver system"

This term is in claims 8, 10, 11 and 44. Claim 8 is deemed representative, and is reproduced below for reference, with the disputed term in boldface:

8. A **television receiver system** comprising:

a filter for receiving one of either video or audio of an analog television transmission and selecting portions of said analog transmission that contain digital signals;

a first digital detector operatively connected to said filter for receiving said selected portions of said analog transmission and detecting a first digital signal;

a second digital detector for receiving information of a selected television program transmission that is separately defined from standard analog television, said second digital detector detecting a second digital signal in said separately defined television program transmission;

a storage device operatively connected to said first and said second digital detectors for receiving detected digital information and assembling said detected information into message units; and

a controller operatively connected to said first detector, said second detector and said storage device, said controller controlling the operation of said first detector and said second detector and controlling the manner by which said storage device assembles message units.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

DEFENDANTS' PROPOSED CONSTR.

The preamble should not be construed to be a [not discussed] limitation in Claim 8.

Post-Hearing: The term "television receiver

If it is determined that the preamble is limiting in Claim 8, PMC proposes that one of skill in the art would understand the term "Television Receiver System" according to ordinary usage to mean "a system which allows a user to receive programming content transmitted from other locations."

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 33-34; Joint Summary at 64-65.

Defendants urge that the construction of "television receiver system" should apply to that term as it appears in claims 11 and 44.

b) Discussion

Neither party has addressed this issue in their briefs; nevertheless, the principal issue appears to be whether the preamble is limiting. In *Catalina Marketing Int'l v. Coolsavings.com*, 289 F.3d 801, 808-9 (Fed. Cir. 2002), the Federal Circuit explained that "[i]n general, a preamble limits the invention if it recites essential structure or steps, or if it is 'necessary to give life, meaning, and vitality' to the claim. Conversely, a preamble is not limiting 'where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.'" [Citations omitted.] The Federal Circuit further laid out "guideposts" for determining whether a preamble is limiting, namely, (1) "Jepson claiming generally indicates intent to use the preamble to define the claimed invention, thereby limiting claim scope," (2) "dependence on a particular disputed preamble phrase for antecedent basis may limit claim scope because it indicates a reliance on both the preamble and claim body to define the claimed invention," (3) "when the preamble is essential to understand limitations or terms in the claim body, the preamble limits claim scope," (4) "when reciting additional structure or steps underscored as important by the specification, the preamble may operate as a claim limitation," (5) "clear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art transforms the preamble into a claim limitation because such reliance indicates use of the preamble to define, in part, the claimed invention. Without such reliance, however, a preamble generally is not limiting when the claim body describes a structurally complete invention such that deletion of the preamble phrase does not affect the structure or steps of the claimed invention," and (6) "preambles describing the use of an invention gen-

erally do not limit the claims because the patentability of apparatus or composition claims depends on the claimed structure, not on the use or purpose of that structure." *Id.* "Thus, preamble language merely extolling benefits or features of the claimed invention does not limit the claim scope without clear reliance on those benefits or features as patentably significant." *Id.*

With the foregoing, in mind, the claims do not recite the preamble in Jepson form, nor do the limitations of the claim body rely on the disputed limitation for antecedent basis, nor does the preamble recite important additional structure. Furthermore, it is apparent from reading the body of the claim that the claim is directed to an apparatus that receives television transmissions; thus, the preamble is not necessary to give "life, meaning and vitality" to the claim. Nor did Harvey *et al.* rely on the preambles during prosecution to distinguish prior art or emphasize patentability. In short, the preamble simply serves "as a convenient label for the invention as a whole," and thus should not be construed as limiting. *See Storage Technology*, 329 F.3d at 831. Thus, construction of the term "television receiver system" need not be reached.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The preambles of claims 8, 10, 11 and 44 are not limiting.

11. "processor"

This term appears in claims 11, 12 and 13. Claim 11 is deemed representative, and is reproduced below for reference, with the disputed term in boldface:

11. A television receiver system comprising:

a first processor for receiving information of a selected television program transmission and detecting a specific signal in said transmission based upon a location or timing pattern of said specific signal in said transmission, said first processor being programmed with information of a varying location or timing pattern;

a second processor operatively connected to said first processor for receiving and processing information of said specific signal, and for identifying

when and where to pass said information based upon said information, and passing said information.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

A digital electronic device that processes information by operating on data according to instructions.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

[not addressed]

Post-Hearing: The terms "first processor"/"second processor"/"processor" require no construction.

Plaintiffs' Harvey VI Chart at 41; Joint Summary at 65.

Defendants urge that the construction of "processor" should apply to that term as it appears in claim 44.

According to the JCCS, the parties agree that "processor" should be defined as "a digital electronic device that processes information by operating on data according to instructions." JCCS at 10.

b) Discussion

As discussed above in connection with construction of the term "first processor means" called for in Harvey IV, a "processor" is "a digital electronic device that processes information by operating on data according to instructions." That construction applies here.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

A "processor" is a digital electronic device that processes information by operating on data according to instructions.

12. "identifying when and where to pass said information based upon said information, and passing said information"

This term appears in claim 11, which is reproduced below for reference, with the disputed term in boldface:

11. A television receiver system comprising:

a first processor for receiving information of a selected television program transmission and detecting a specific signal in said transmission based upon a location or timing pattern of said specific signal in said transmission, said first processor being programmed with information of a varying location or timing pattern;

a second processor operatively connected to said first processor for receiving and processing information of said specific signal, and for **identifying when and where to pass said information based upon said information, and passing said information.**

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[S]hould be accorded their ordinary meaning such that no separate definition of the entire phrase is required. [Otherwise,] Plaintiffs suggest that the entire phrase be defined as: "Information from or information about the specific signal is used by the second processor to determine when and where to pass the information. The processor then passes the information to the appropriate destination at the appropriate time.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

The term "said information . . ." is indefinite, as one is left to one [sic] whether it refers to "information of a selected television program," "information of a varying location or timing pattern," or "information of said specific signal."

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 43; Defendants' Harvey VI Chart at 30; Joint Summary at 74.

b) Discussion

The issue appears to be whether all of the recitations of "said information" render the claim indefinite. The claim has two elements, namely, a "first processor" that (1) receives information of a transmission and (2) detects a specific signal in that transmission:

a first processor for [1] receiving information of a selected television program transmission and [2] detecting a specific signal in said transmission based upon a location or timing pattern of said specific signal in said transmission, said first processor being programmed with information of a varying location or timing pattern. [Numbering and underlining added.]

and a "second processor" that (1) receives and processes information of the specific signals and (2) identifies "when and where to pass said information based upon said information, and passing said information:"

a second processor operatively connected to said first processor [1] for receiving and processing information of said specific signal, and [2] for identifying when and where to pass said information based upon said information, and passing said information. [Numbering and underlining added.]

Thus, the claim posits two distinct "informations," namely, (1) information of a transmission and (2) information of a specific signal in that transmission. Thus, it is not immediately apparent which "information" the term "said information" refers to. Unfortunately, neither party has pointed to any part of the specification that might assist in clarifying the matter.

The claim, of course, makes sense whether each "said information" refers to the same or different antecedent information. Overall, though, it seems most likely that "said information" refers to "information of said specific signals." As discussed at length above, for example, the "signal processor" of Fig. 2 discloses decoders, such as TV signal decoder 30, that include devices capable of functioning as the claimed "first" and "second" processors:

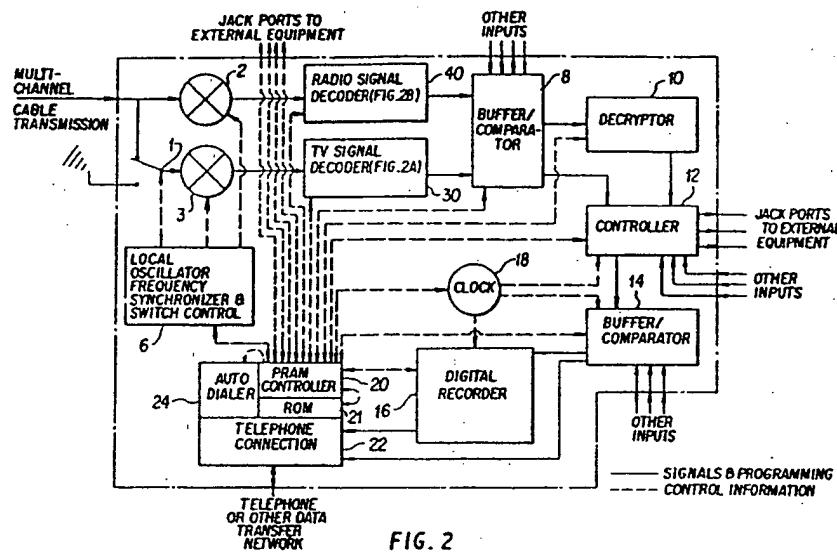


FIG. 2

As shown in Fig. 2, television transmissions, when received, are passed to the TV signal decoder 30.

Television signal decoder 30 is depicted in Fig. 2A:

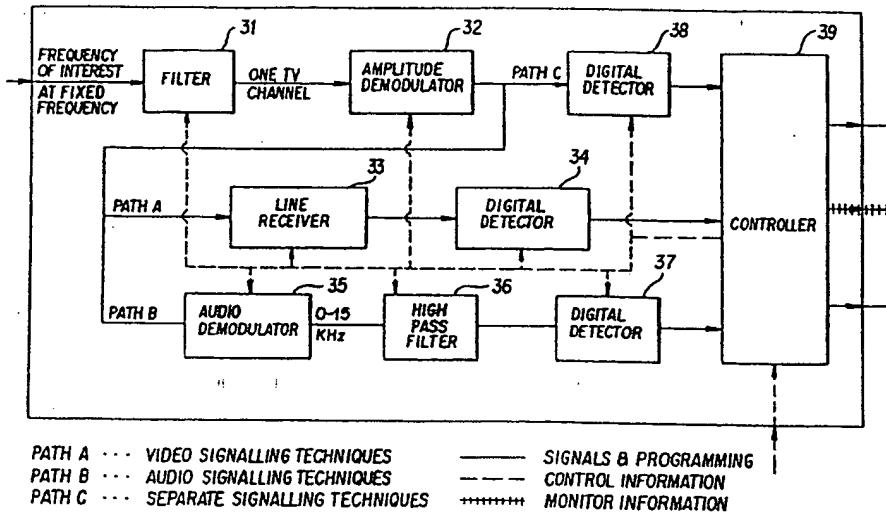


FIG. 2A

As depicted in Fig. 2A, the television transmission takes three paths – A, B and C – so that embedded signals may be detected in the picture, audio and other (respectively) of the transmission by the digital detectors 34, 37 and 38 (also respectively). *See Harvey VI, col. 21, line 27 to col. 22, line 2.* Digital detector 34, for example, would thus meet the requirements of the claimed “first processor.”

From the detectors, the detected signal information is input to the controller 39, *i.e.*, the digital detectors are “operatively connected” to the controller. *See id.* Based on Harvey *et al.*’s disclosure, controller 39 meets the requirement of the claimed “second processor.”

Controller, 39 *** is preprogrammed to receive units of signal information, to assemble said units into signal words that subscriber station apparatus can receive and process, and to transfer said words to said apparatus. In each decoder, the controller, 39 *** receives detected digital information from the relevant detector or detectors, 34, 37, 38, ***. Upon receiving any given instance of signal information, controller, 39 *** is preprogrammed to process said information automatically. Controller, 39, is preprogrammed *** to convert, as may be required, the corrected information, by means of input protocol techniques well known in the art, into digital information that subscriber station apparatus can receive and process; ***; to identify in a predetermined fashion or fashions subscriber station apparatus to which said signal information should be transferred; and to transfer said signals to said apparatus. Said controller, 39 *** has one or more output ports for communicating signal information to said apparatus.

Id. at col. 22, line 63 to col. 23, line 19. By the time the signals reach the controller, the processing is more specifically related to particular signals, and the controller is able to determine, from those signals, or information regarding those signals, which apparatus the signal should be directed to, and pass the signals accordingly. That, it seems clear enough, is what claim 11 is referring to when it calls for "identifying when and where to pass said information based upon said information, and passing said information."

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

In the phrase "identifying when and where to pass said information based upon said information, and passing said information" called for in claim 11, the term "said information" refers to "information of said specific signals."

13. "identifying those of said operating instructions addressed to said processor"

This term appears in claim 12, below (the disputed term is in boldface):

12. A reprogrammable system comprising:

a digital detector for receiving information of a transmission and detecting digital signals in said transmission, said digital signals including new operating instructions;

a processor operatively connected to said digital detector for receiving and processing information of some of said digital signals, said processor identifying those of said operating instructions **addressed** to said processor, said processor instructing said detector to detect and pass specified signals;

a memory device operatively connected to said processor for holding operating instructions **addressed** to said processor, said operating instructions controlling the operation of said processor; and

said processor loading said operating instructions that are **addressed** to said processor into said memory device to thereby reprogram said processor, said operating instructions including instructions to cause said processor to cause said detector to detect different signals.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

Interpret, recognize or determine what operating instructions are intended for use by the processor or directed to the processor.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

The term "operating instructions addressed to said processor" means that the operating instructions are specifically directed to the particular identified subscriber station apparatus uniquely identified in the transmitted message, to the exclusion of non-addressed (non-identified) subscriber station apparatus. Operating instructions transmitted without specific subscriber station addresses, *i.e.*, software transmitted globally and available to receiver terminals without regard to particular addresses thereof are clearly excluded from the claim.

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 44-45; Defendants' Harvey VI Chart at 32; Joint Summary at 42-43.

The plaintiffs contend that the defendants too narrowly construe the term "address," and that the claim does not state or suggest that the operating instructions are "addressed" by being "uniquely identified for that particular receiver location." According to the plaintiffs, the claim does not specify the particular manner in which the instructions are addressed to the processor, meaning that "addressed" could encompass any variation consistent with ordinary usage and the intrinsic evidence. The plaintiffs contend that the specification supports their proposed construction because it discloses instructions directed to a particular device at a receiver station as opposed to other devices at that receiver station, as well as instructions directed to particular receiver station processors as opposed to other receiver station processors. Plaintiffs' Opening *Markman* Brief at 63-66.

The defendants, on the other hand, urge that the plaintiffs would effectively read the limitation "addressed" out of the claim. In the context of the claim, the defendants contend "addressed" means specifically directed to particular identified subscriber station apparatus uniquely identified in the transmitted message and excludes non-identified, *i.e.*, non-addressed subscriber station apparatus. The defendants also contend that the specification further describes the use of the unique subscriber station identifying code for controlling access to a stored decryption used for decryption of received encrypted signals. The defendants urge that one of ordinary skill in the art in 1987 would

have understood that the term “addressed” was used in the computer and communication arts to distinguish the transmission of a signal or information that specified a particular destination at which the signal or information was to be received from a global transmission that carried no identification of a specific destination. Defendants’ Opening *Markman* Brief at 73-75.

b) Discussion

Beginning, as always, with the plain language of the claim, the “customary” meaning of the term “address” in the computer field is “[a] number used in information storage or retrieval that is assigned to a specific memory location,” AMERICAN HERITAGE DICTIONARY 78 (2nd ed. 1985), and “a location (as in the memory of a computer) where particular information is stored; *also*: the digits that identify such a location.” WEBSTER’S NINTH NEW COLLEGIATE DICTIONARY 55 (1984). Technical references are in accord, *viz*:

(1) (semiconductor memory). Those inputs whose states select a particular cell or group of cells.

(2) (electronic computations and data processing). (A) An identification, as represented by a name, label, or number, for a register, location in a storage, or any other data source or destination such as the location of a station in a communication network. (B) Loosely, any part of an instruction that specifies the location of an operand for the instruction. (C) (electronic machine-control system). A means of identifying information or a location in a control system. Example: The x in the command x 12345 is an address identifying the numbers 12345 as referring to a position on the x axis.

(3) (software). (A) A character or group of characters that identifies a register, a particular part of storage, or some other data source or destination. (B) To refer to a device or an item of data. *See: data*.

NEW IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONIC TERMS 24 (3rd ed. 1984).⁸⁴

See also DICTIONARY OF INFORMATION TECHNOLOGY 5 (2nd ed. 1986). Thus, the term “address”

⁸⁴ The Seventh Edition (2000), at page 17, demonstrates that the term “address” is used in many more contexts, but nevertheless retains that same connotation:

(1) (semiconductor memory) Those inputs whose states select a particular cell or group of cells.
(TT/C/AMS/SCC31) 662-1980s, 1377-1997

(2) (A) (electronic computation) An identification, as represented by a name, label, or number, for a register, location in storage, or any other data source or destination such as the location of a station in a communication network. (B) (electronic computation) Loosely, any part of an instruction that speci-

connotes an identification that specifies a location, source or destination. Furthermore, that connotation is the same today, as well. *See, e.g.*, MICROSOFT COMPUTER DICTIONARY 19 (5th ed. 2002) ("1. A number specifying a location in memory where data is stored. * * * 2. A name or token specifying a particular computer or site on the Internet or other network. 3. A code used to specify an e-mail destination."); McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS 36 (6th ed. 2003)(in the field of computer science: "The number or name that uniquely identifies a register, memory location or storage device in a computer."). Harvey *et al.* used "address" as a transitive verb, of course, but the connotation is clear – to "address" means to identify by name a specific location, direct to a specific location or destination, or to specify a particular source. *See, e.g.*,

fies the location of an operand for the instruction. (C) (electronic computation) (electronic machine-control system) A means of identifying information or a location in a control system. Example: The x in the command x 12345 is an address identifying the numbers 12345 as referring to a position on the x axis. (C) [85]

(3) (test pattern language) The identification of a specific memory word, usually expressed in x-, y-, and z-coordinates and in binary code. (TT/C) 660-1986w

(4) A character or group of characters that identifies a register, a particular part of storage, or some other data source or destination. (ED/ED) 641-1987w, 1005-1998

(5) STEbus) The reference to a unit of data or the value represented by the address lines while ADRSTB* is active. (MM/C) 1000-1987r.

(6) An identifier that tells where a service access point (SAP) may be found (ISO 7498) (LM/C) 8802-6-1994

(7) (A) A number, character or group of character[s] that identifies a given device or storage location. (B) To refer to a device, data item or storage location by an identifying number, character, or group of characters, known as its address, as in definition (A). *Synonym:* address reference. *See also:* relative address; relocatable address; indirect address; virtual address; absolute address; implied addressing; effective address. (C) 610.10-1994

(8) An identifying name, label, or number for a data terminal, source, or storage location calculation. (SUB/PE) 999-1992w

(9) An unambiguous name, label, or number that identifies the location of a particular entity or service. (C/PA) 1328.2-1993w, 1326.2-1993w, 1327.2-1993w 1224.2-1993w

(10) A character or group of characters that identifies a register, a particular part of storage, or some other data source or destination. (IM/ST) 1451.2-1997

(11) *See also:* primary address (NID) 960-1993

It should be explained that the IEEE Dictionary indicates variations in meanings in different technical categories and also cross-references IEEE and other standards. For example, definition (7) references IEEE standard 610.10-1994. As for fields of technology, in the above definitions, "C" means "computer," "MM" means "computer-microprocessors and microcomputers," "TT" means "test technology," "IM" means "instrumentation and measurement," "SUB" means "substations," "ED" means "electronic devices," etc.

MERRIAM-WEBSTER'S ONLINE DICTIONARY⁸⁵ ("to identify (as a peripheral or memory location) by an address or a name for information transfer").

Harvey *et al.* consistently used the word "address" in that sense, *i.e.*, to connote directing something, such as a command, to a specific apparatus. For example, in the "Background of the Invention," Harvey *et al.* explained that "[t]he prior art includes so-called 'addressable' systems that have capacity for controlling specific individual subscriber station apparatus by means of control instructions transmitted in broadcasts. Such systems enable broadcasters to turn off subscriber station decoder/decryptor apparatus of subscribers who do not pay their bills and turn them back on when the bills are paid." Harvey VI, col. 7, lines 16-23. Then, in explaining their invention, Harvey *et al.* explained that "[i]n the present invention, the embedded signals contain digital information that may include addresses of specific receiver apparatus controlled by the signals and instructions that identify particular functions the signals cause addressed apparatus to perform." [Emphasis added.] *Id.* at col. 9, lines 56-60.

Harvey *et al.* described the use of such "embedded signals" in the "Wall Street Week" example: "At said program originating studio, at the outset of said program transmission, a first series of control instructions is generated, embedded sequentially on said line or lines of the vertical interval, and transmitted on the first and each successive frame of said television program transmission, signal unit by signal unit and word by word, until said series has been transmitted in full. The instructions of said series are addressed to and control the microcomputer, 205, of each subscriber station." *Id.* at col. 14, lines 22-31. That is, Harvey *et al.* used "address" to connote a specific apparatus.

Also, in more generally describing their system, in a section entitled "Introduction To The Signals Of The Integrated System," Harvey *et al.* explained what the signals are and what they do: "[t]he signals of the present invention [*i.e.*, SPAM signals] are the modalities whereby stations that originate programming transmissions control the handling, generating, and displaying of programming at subscriber stations." "SPAM signals control and coordinate a wide variety of subscriber stations. * * * * At said stations, SPAM signals address, control, and coordinate diverse apparatus, and the nature and extent of the apparatus installed at any given station can vary greatly. SPAM signals

⁸⁵ <http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&cva=address> (last visited June 8, 2004).

control not only various kinds of receivers and tuners; transmission switches and channel selectors; computers; printers and video and audio display apparatus; and video, audio, and digital communications transmission recorders but also signal processor system apparatus including decoders; decryptors; control signal switching apparatus; and the communications meters, called signal processors, of the present invention. Besides apparatus for communicating programming to viewers, SPAM signals also address and control subscriber station control apparatus such as, for example, furnace control units whose operations are automatic and are improved with improved information and subscriber station meter apparatus such as, for example, utilities meters that collect and transmit meter information to remote metering stations." *Id.* at col. 24, line 34 to col. 25, line 6. *See also id.* at col. 34, lines 41-46 ("A SPAM message is the modality whereby the original transmission station that originates said message controls specific addressed apparatus at subscriber stations.").

Harvey *et al.* then explained that the signals generally contained three types of information – (1) data, (2) computer program instructions, and (3) commands:

Data and program instructions are often recorded in computer memories at subscriber stations for deferred execution. Commands are generally for immediate execution and often execute computer programs or control steps in programs already in process. Often said data, programs, and commands control subscriber station apparatus that automatically handle, decrypt, transmit, and/or present program units of conventional television, radio, and other media. [Emphasis added.]

Id. at col. 25, lines 7-17. Then, in a section entitled "The Composition of Signal Information . . . Commands, Information Segments, and Padding Bits," Harvey *et al.* further explained "commands:"

A command is an instance of signal information that is addressed to particular subscriber station apparatus and that causes said apparatus to perform a particular function or functions. A command is always constituted of at least a header and an execution segment. With respect to any given command, its execution segment contains information that specifies the apparatus that said command addresses and specifies a particular function or functions that said command causes said apparatus to perform.⁸⁶ (Hereinafter, functions that execution seg-

⁸⁶ Harvey *et al.* further explained the "execution segment:"

Execution segment information includes the subscriber station apparatus that the command of said segment addresses and the controlled functions said apparatus is to perform. ("ITS" refers, hereinaf-

ment information causes subscriber station apparatus to perform are called "controlled functions.") [Emphasis added.]

Id. at col. 26, lines 48-59. Harvey *et al.* also described particular types of commands, namely, "particular commands" and "pseudo commands:"

Particular commands (called, hereinafter, "specified condition commands") always contain meter-monitor segments. Said commands cause addressed apparatus to perform controlled functions only when specified conditions exist, and meter-monitor information of said commands specifies the conditions that must exist.

* * * *

The preferred embodiment includes one appropriate command (hereinafter called the "pseudo command") that is addressed to no apparatus and one command that is addressed to URS signal processors, 200, (hereinafter, the "meter command") but does not instruct said processors, 200, to perform any controlled function. These commands are always transmitted with meter-monitor segment data that receiver station apparatus automatically process and record. By transmitting pseudo command and meter command signals, transmission stations cause receiver station apparatus to record meter-monitor segment information without executing controlled functions. The pseudo command enables a so-called ratings service to use the same system for gathering ratings on conven-

ter, to intermediate transmission station apparatus, and "URS" refers to ultimate receiver station apparatus.) Examples of addressed apparatus include:

ITS signal processors (in 71 in FIG. 6),
ITS controller/computers (73 in FIG. 6),
URS signal processors (200 in FIG. 7),
URS microcomputers (205 in FIG. 7),
URS printers (221 in FIG. 7), and
URS utilities meters (262 in FIG. 7).

Examples of controlled functions include:

Load and run the contents of the information segment.
Decrypt the execution segment using decryption key G.
Decrypt the execution and meter-monitor segments using decryption key J.
Commence the video overlay combining designated in the meter-monitor segment.

* * * *

[Emphasis added.] *Id.* at col. 27, lines 19-40.

tional programming transmissions that it uses for combined media without causing combined media apparatus to execute controlled functions at inappropriate times (e.g., combine overlays onto displays of conventional television programming). The meter command causes apparatus such as controller, 12, of FIG. 2D to transmit meter information to buffer/comparator, 14, without performing any controlled function. [Emphasis added.]

Id. at col. 26, line 67 to col. 27, lines 4, col. 28, line 54 to col. 29, line 8. In short, as the foregoing illustrates, Harvey *et al.* used "address" to connote directing a signal to a specific apparatus. It is further clear that Harvey *et al.* also used – and distinguished – signals that were not "addressed" to a particular address but were more generally broadcast in a non-addressed fashion to the receiver stations, *i.e.*, signals that were "addressed to no apparatus," such as the "pseudo command." According to the disclosure, Harvey *et al.* "addressed" the signals to particular apparatus because they recognized that different apparatus operated differently. See *id.* at col. 28, lines 28-35 ("The determination of appropriate addressed apparatus and controlled function combinations takes into account the facts that different apparatus, at any given subscriber station, can be preprogrammed to interpret any given instance of execution segment information differently and that subscriber station apparatus can be preprogrammed to automatically alter execution segment information."). In short, Harvey *et al.* used the word "address" according to its "customary" meaning.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The phrase "operating instructions addressed to said processor" means that the operating instructions are directed to the particular processor to which "said processor" refers.

14. "loading said operating instructions that are addressed to said processor into said memory device to thereby reprogram said processor"

This term appears in claim 12, below (the disputed term is in boldface, other pertinent terms are underlined):

12. A reprogrammable system comprising:

a digital detector for receiving information of a transmission and detecting digital signals in said transmission, said digital signals including new operating instructions;

a processor operatively connected to said digital detector for receiving and processing information of some of said digital signals, said processor identifying those of said operating instructions addressed to said processor, said processor instructing said detector to detect and pass specified signals;

a memory device operatively connected to said processor for holding operating instructions addressed to said processor, said operating instructions controlling the operation of said processor; and

said processor loading said operating instructions that are addressed to said processor into said memory device to thereby reprogram said processor, said operating instructions including instructions to cause said processor to cause said detector to detect different signals.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

DEFENDANTS' PROPOSED CONSTR.

[T]he new operating instructions are loaded into [not addressed]
a nonvolatile memory to reprogram the processor on an ongoing basis, such as by loading an Post-Hearing: [no change] operating system into ROM or EPROM.

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 52; Joint Summary at 43.

The parties urge that the construction of "are addressed" should apply to that term as it appears in claim 13.

The plaintiffs contend that their proposed construction provides that (1) the operating instructions are operating system software, and that (2) the operating system software is loaded into a

nonvolatile memory to reprogram the processor on an ongoing basis, and that is consistent with their definition for "reprogramming" in Harvey V, claim 9. According to the plaintiffs, the specification demonstrates that "operating instructions" refers to operating system software that controls the basic functionality of the processor, as opposed to application-type software, and that the operating instructions are stored in a non-volatile memory, such as an EPROM or ROM, and held so as to reprogram the processor on an ongoing basis when new operating instructions are downloaded. Plaintiffs' Opening *Markman* Brief at 66-68.

b) Discussion

The plaintiffs contend that the disputed term means two things, namely, that (1) the operating instructions are operating system software, and that (2) the operating system software is loaded into a nonvolatile memory to reprogram the processor on an ongoing basis.

As for (1), the claim simply calls for "said operating instructions," not "operating system software." In any case, the claim recites the function of the "operating instructions," i.e., "controlling the operation of said processor," and further says that the "operating instructions" include "instructions to cause said processor to cause said detector to detect different signals." Also, the claim states that the "operating instructions" are "addressed to said processor." The function of "controlling the operation of said processor," of course, is what "operating system software" does. But that latter instruction, i.e., "instructions to cause * * *," seems to go beyond the typical functions of "operating system software."⁸⁷ That is, the "instructions to cause said processor to cause said detector

⁸⁷ An "operating system," according to the MICROSOFT COMPUTER DICTIONARY 521 (5th ed. 2002), is:

Operating system – Also called a disk operating system. 1. Software that controls the carrying out of computer programs and that may provide scheduling, debugging, input/output control, accounting, compilation, storage assignment, data management, and related services. 2. The totality of software that describes the methods by which data is processed to obtain a desired result. 3. A collection of software that schedules jobs; assigns resources, such as peripherals; manages all data transfers between the computer and its peripherals; assigns places in memory to programs and data; processes interrupts; and performs various housekeeping functions. 4. A structured set of software routines whose function is to control the execution sequence of programs running on a computer, supervise the input/output activities of these programs, and support the development of new programs through such functions as assembly, compilation, editing, and debugging. 5. A collection of system software that permits user-written tasks to interface to the machine hardware and interact with other tasks in a straightforward, efficient and safe manner. 6. An integrated collection of supervisory routines (usually user-transparent) responsible for allocation of system resources among user tasks. These routines may include memory management, I/O handling, logging, storage assignment, operator interaction,

to detect different signals" go beyond operation of the processor to operation of a different device. Nevertheless, the "said operating instructions" finds antecedent basis in the term "new operating instructions," which the parties have agreed means "new computer software for reprogramming a computer operating system to operate differently." JCCS at 10. The special master will construe "said operating instructions" accordingly.

As for (2), the claim simply calls for loading the instructions into a "memory device," which includes, but certainly is not limited to, non-volatile memory. For example, Harvey *et al.* say that "[m]any computers are designed to hold operating system instructions at RAM. The IBM PC is one such computer." Harvey VI, col. 287, lines 53-55. *See also* Harvey VI, col. 292, line 32 to col. 293, line 8. In any case, a "memory device" is simply a "memory," as that term is commonly understood to mean in the computer field and as construed above in connection with construction of the term "memory means" in the claims of Harvey V, namely, a device where information can be stored and retrieved.

Also, the claim makes no mention of loading the "operating instructions" "on an ongoing basis," and, lacking any sound basis for doing otherwise, that limitation is thus rejected. "It is improper for a court to add 'extraneous' limitations to a claim, that is, limitations added wholly apart from any need to interpret what the patentee meant by particular words or phrases in the claim." *Hoganas*, 9 F.3d at 950.

Finally, as for the meaning of "reprogram," that word was defined above in connection with construction of the term "control means for *** selectively reprogramming" in claim 9 of Harvey V. There, the word "reprogramming" was construed to mean rewriting or revising at least a portion of the operating system. The word "reprogram" thus means to rewrite or revise at least a portion of the operating system. That, of course, is not inconsistent with the construction of "operating instructions."

and job scheduling. Every operating system is different in what services it provides and the way in which the services are implemented. Programs written for one operating system won't normally run under other operating systems.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

In claim 12, "new operating instructions" means new computer software for re-programming a computer operating system to operate differently, that meet the express requirements of claim, namely, that (1) the instructions are "for controlling the operation of said processor," (2) include "instructions to cause said processor to cause said detector to detect different signals," and (3) the instructions are "addressed to said processor." A "memory device" is a device where information can be stored and retrieved. In the phrase "loading said operating instructions that are addressed to said processor into said memory device to thereby reprogram said processor," the term "to *** reprogram" means to rewrite or revise at least a portion of the operating system.

15. "instructions to cause said processor to cause said detector to detect different signals"

This limitation appears in claim 12, below (the disputed term is in boldface):

12. A reprogrammable system comprising:

a digital detector * * *;

a processor operatively connected to said digital detector * * *;

a memory device operatively connected to said processor * * *; and

said processor loading said operating instructions that are addressed to said processor into said memory device to thereby reprogram said processor, said operating instructions including **instructions to cause said processor to cause said detector to detect different signals**.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[no construction necessary]

If a specific definition of this phrase is held to be necessary, then someone of ordinary skill in the art would understand that its common, ordinary meaning is "the operating instructions cause the

DEFENDANTS' PROPOSED CONSTR.

The term "instructions to cause said processor to cause said detector to detect different signals" requires that the new operating instructions addressed to the processor be automatically or self-executing, i.e., that the detector detect different signals as a result of the new operating instruc-

detection of signals that would not have been detected without the instructions to the processor."

Post-Hearing: [no change]

tions being received, without requiring any additional event. This term does not include operating instructions that merely enable the detector to detect different signals.

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 52-53; Defendants' Harvey VI Chart at 35; Joint Summary at 44.

According to the defendants, the parties disagree whether the recited instructions are self-executing or merely provide enabling information. The defendants urge that their proposed construction is supported by the plain meaning of the term "cause," as described in the specification's "Wall Street Week" examples." Defendants' Opening *Markman* Brief at 75-76.

b) Discussion

The plain language of the claim says that the instructions "cause," not enable. The defendants appear to require direct and immediate "causation," i.e., "without requiring any additional event." The claim simply uses the word "cause," which means "to effect by command, authority, or force." MERRIAM-WEBSTER'S ONLINE DICTIONARY.⁸⁸ That, of course, is a different connotation than "enable," which means "to make possible, practical, or easy." *Id.* Thus, the defendants are correct to the extent that "cause" does not mean "enable."

However, the other limitations that defendants propose such as "self-executing instructions" and "additional events" seem to muddle, rather than clarify the claim. That is, the claim language using the word "cause" seems clear enough on its face. The point is to clarify claim language, not create further debate – and hence a "construction" of the claim construction – as to what constitutes a "self executing instruction" or an "additional event." Beyond the plain language of the claim, simply clarifying the definition of "cause" and that "cause" does not mean "enable" is deemed sufficient.

⁸⁸ <http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=cause> (last visited June 7, 2004).

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

In the phrase "instructions to cause said processor to cause said detector to detect different signals," the word "cause" means "to effect by command," and does not mean "enable" or make possible. This limitation does not otherwise require construction.

16. "transferring said detected signals to said apparatus that are addressed by said signals or to be controlled by said signals"

This term appears in claim 13 thus (the disputed term is in boldface):

13. A signal processing system comprising:

- a digital detector for detecting digital signals;
- a processor operatively connected to said digital detector for receiving and processing information of a signal detected by said detector, processing the received detected signals to identify how and where to pass said information;
- a plurality of apparatus operatively connected to said processor, said processor transferring said detected signals to said apparatus that are addressed by said signals or to be controlled by said signals;
- a memory device operatively connected to said processor for holding operating instructions that control said processor; and
- a controller operatively connected to said detector and said memory device for controlling the detector in its detection of signals.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[T]he detected signals are transferred to apparatus that are addressed by the signals and/or that are to be controlled by the signals.

Post-Hearing: [no change]

The phrase "apparatus that are addressed by said signals" should be construed consistently with

DEFENDANTS' PROPOSED CONSTR.

The signals that are transferred are the signals that are detected by the digital detector themselves and not merely information derived from those signals.

Post-Hearing: The term "transferring said detected signals" does not require construction.

"operating instructions addressed to said processor."

Plaintiffs' Harvey VI Chart at 62-63; Defendants' Harvey VI Chart at 41-42; Joint Summary at 69-70.

b) Discussion

The principal issue here is whether "or," as used in the claim, means "or" or "and/or." Generally speaking, as the foregoing sentence suggests, the word "or" states alternatives. In, say, a Boolean sense, though, "or" may mean "and/or." For example, in computing, an OR gate produces an output whenever any one (or more) of its inputs is energized, i.e., it produces a logical 1 when any one or all of its outputs are logical 1, but produces a logical 0 only when all of its inputs are logical 0. See, e.g., MICROSOFT COMPUTER DICTIONARY 526 (5th ed. 2002). See also *Kustom Signals, Inc. v. Applied Concepts, Inc.*, 264 F.3d 1326 (Fed. Cir. 2001)(holding that "or" means "either or" but not both, the MICROSOFT COMPUTER DICTIONARY notwithstanding, based on the specification and prosecution history). The question is whether Harvey *et al.* used "or" in that sense.

Turning to the specification, the controller of decoder 30 of Fig. 2 is capable of functioning as the claimed "processor."

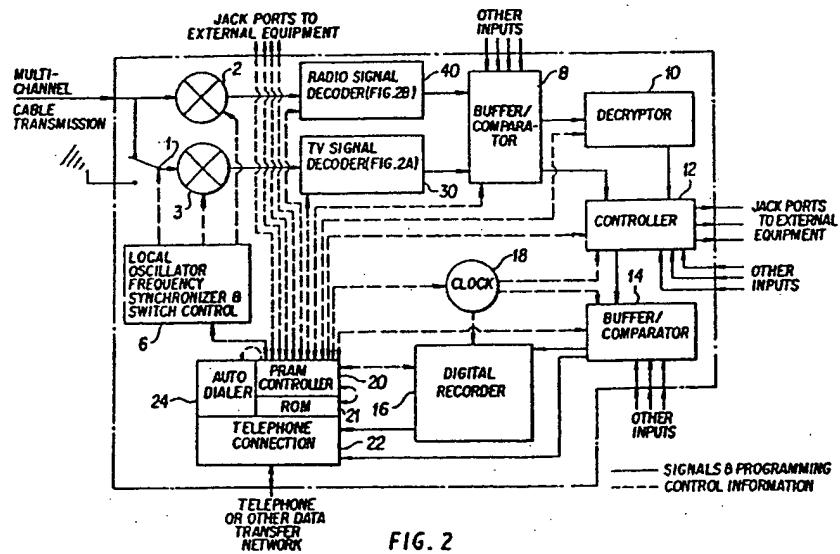


FIG. 2

Controller 39 of decoder 30 is depicted in Fig. 2A:

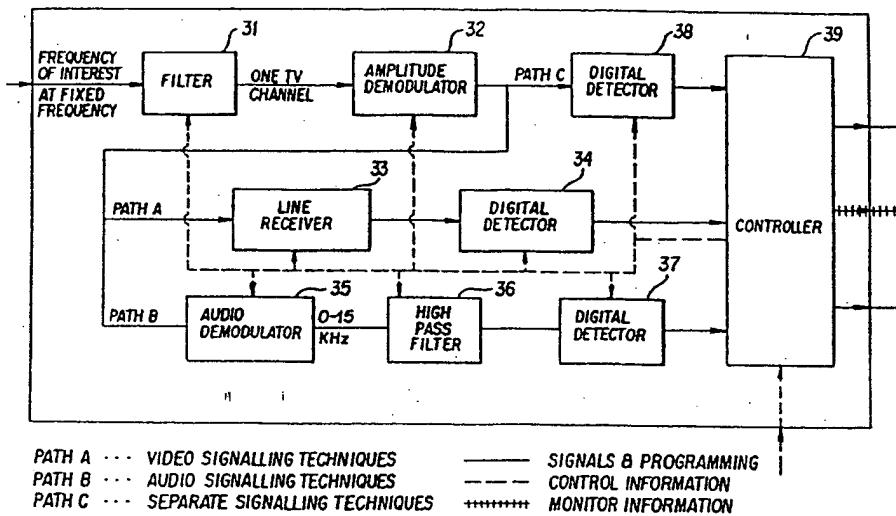


FIG. 2A

As depicted in Fig. 2A, the television transmission takes three paths – A, B and C – so that embedded signals may be detected in the picture, audio and other (respectively) of the transmission by the digital detectors 34, 37 and 38 (also respectively). *See Harvey VI, col. 21, line 27 to col. 22, line 2.* From the detectors, the detected signal information is input to the controller 39, i.e., the digital detectors are “operatively connected” to the controller. *See id.* Based on Harvey *et al.*’s disclosure, the controller 39 meets the requirement of the claimed “processor.”

Controller, 39 *** is preprogrammed to receive units of signal information, to assemble said units into signal words that subscriber station apparatus can receive and process, and to transfer said words to said apparatus. In each decoder, the controller, 39 *** receives detected digital information from the relevant detector or detectors, 34, 37, 38, ** *. Upon receiving any given instance of signal information, controller, 39 *** is preprogrammed to process said information automatically. Controller, 39, is preprogrammed *** to convert, as may be required, the corrected information, by means of input protocol techniques well known in the art, into digital information that subscriber station apparatus can receive and process; ** *, to identify in a predetermined fashion or fashions subscriber station apparatus to which said signal information should be transferred; and to transfer said signals to said apparatus. Said controller, 39 *** has one or more output ports for communicating signal information to said apparatus.

Id. at col. 22, line 63 to col. 23, line 19. The controller, in that description, simply sends signals to the apparatus "to which said signal information should be transferred," apparently regardless of whether the apparatus is to be controlled by the signal or the signal is simply addressed to the apparatus. Significantly, the controller takes the signals and crafts them into "signal words that subscriber station apparatus can receive and process, and to transfer said words to said apparatus" — which appears to mean that regardless of whether the signal is simply for receipt ("addressed by said signals") or processing ("controlled by said signals"), those words are transferred to the apparatus to which they pertain. That is, the controller does not send addressed signals, and discard the control signals, or vice versa. Rather, the controller apparently sends, and hence utilizes, both. Thus, the plaintiffs appear to be correct.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

In the phrase "transferring said detected signals to said apparatus that are addressed by said signals or to be controlled by said signals," the detected signals are transferred to apparatus that are addressed by the signals and/or that are to be controlled by the signals.

17. "television programming"

This limitation appears in claims 15, 23, 24 and 44.

15. A method for identifying and selecting television programming in a system that is adapted to direct selected television programming to a television programming output or storage, said system including a processor for receiving and processing at least part of the television programming transmission, a means for transferring said programming selectively from a television programming receiver to a television programming output device or storage device, and a controller for receiving information from said processor and for controlling said means for transferring on the basis of at least some of said information, said method comprising the steps of: * * * *

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[T]ransmitted video and audio information intended to entertain, instruct or inform the viewer. The video of the television programming may contain any information that represents a visually perceptible presentation, such as graphics, images (still or moving), or text.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

[T]elevision content transmitted by way of conventional television signals (e.g., audio and video) for receipt by viewers over a particular television channel. Computer processing related and other user specific programming is excluded.

Post-Hearing: “[T]elevision programming” means television content including a video portion and accompanying studio generated text and/or graphics, and an audio portion included as part of a mass-medium transmission. This term involves only single-channel transmissions, and does not include a multi-channel transmission having multiple simultaneous programs and services.

Plaintiffs' Harvey VI Chart at 143; Defendants' Harvey VI Chart at 44-45; Joint Summary at 45.

The defendants urge that the disputed term should be construed consistently with the term “television program material” in Harvey I, claim 1, and “television program transmission” in Harvey VI, claim 6. According to the defendants, the parties’ disagreement concerns whether television programming within the scope of the claims is limited to conventional television content transmitted by way of conventional television signals and whether it is transmitted over a single channel. Defendants’ Opening *Markman* Brief at 77.

The plaintiffs do not address this term in their *Markman* briefs.

b) Discussion

Defendants are correct that this term should be construed consistently with the terms “television program material” and “television program transmission,” but that does not mean that every limitation of the latter should also limit the former. For example, claim 15 – the claim at issue here – calls for both “television programming” and a “television program transmission,” and they are not the same thing. “Television programming” refers to the type of programs carried on a “television program transmission,” which has been separately construed above.

As noted above, the parties agree that "programming" generally means everything that is transmitted electronically to entertain, instruct or inform, including television, radio, broadcast print, and computer programming as well as combined medium programming." The word "television" simply restricts that broad definition of "programming" to the television context. That is, "television programming" is simply everything that is transmitted electronically to entertain, instruct or inform via television. That, of course, includes "television program material," which was construed above to mean television program content presented in video, audio, and/or graphics through a television. If the "television programming" is required by the claim to be part of a "television program transmission," as appears to be the case in claim 15, then the term "television programming" is restricted by the transmission in which it is carried. Otherwise, though, the plain meaning of "television programming" *per se* does not warrant the limitations proposed by the defendants.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

"Television programming" is everything that is transmitted electronically to entertain, instruct or inform via television.

18. "means for transferring said programming selectively from a television programming receiver to a television programming output device or storage device"

This limitation appears in claim 15, below (the disputed term is in boldface):

15. A method for identifying and selecting television programming in a system that is adapted to direct selected television programming to a television programming output or storage, said system including a processor for receiving and processing at least part of the television programming transmission, a **means for transferring said programming selectively from a television programming receiver to a television programming output device or storage device**, and a controller for receiving information from said processor and for controlling said means for transferring on the basis of at least some of said information, said method comprising the steps of:

inputting to said controller * * *;

inputting at least part of a television programming transmission * * *;

detecting, locating or identifying * * *; and

inputting information of said data to said controller, determining based on said program unit information that said specific unit is a specific unit and thereby to enable said controller to select at least a portion of said specific television program unit and cause **said means for transferring** to transfer information of said selected portion to said television programming output device or storage device.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[S]hould be construed under § 112(6). The function performed in Claim 15 is "transferring said programming selectively from a television programming receiver to a television programming output device or storage device." The structure corresponding to the recited function is a processor or computer, such as signal processor 200, microcomputer 205, signal processor 71, computer 73, signal processor 112, or processor 204.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

[Should be construed] under 35 U.S.C. § 112, ¶ 6. [T]he function of the means for transferring is "transferring said programming selectively from a television programming receiver to a television programming output device or storage device." [The corresponding structure is] matrix switch 75 operating under the control of computer 73 (see Figs. 6A and 6B), and equivalents thereof.

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 65; Defendants' Harvey VI Chart at 46-47; Joint Summary at 45-46.

According to the JCCS, the parties agree that § 112(6) applies, and that the function is as recited in the claims. However, the parties dispute the interpretation of that function, as well as the corresponding structure. JCCS at 11.

According to the plaintiffs, the key difference between the parties' proposed constructions is that the defendants limit the corresponding structures to the intermediate transmission station embodiment, whereas the plaintiffs identify additional structures corresponding to user receiver station embodiments. Furthermore, the plaintiffs contend, the defendants incorrectly incorporate extraneous structures by pointing to a combined processor-type device and matrix switch. The plaintiffs urge that the plain language contemplates a single "selection" of the particular programming out of the television programming transmission, as opposed to selection between a programming output device and a storage device as the destination for that programming. The plaintiffs say that is con-

sistent with the surrounding claim language, particularly the end of the claim, which recites that the result of the method is to cause the means for transferring "to transfer information of said selected portion to said television programming output device or storage device," i.e., the claim mentions only the selected programming, not selection of an output device or storage device. According to the plaintiffs, the plain meaning of the claim requires that the selected programming is transferred to an "output device" and/or "storage device," i.e., the structure would perform the recited function if it either (1) transfers the selected programming to either an output device or a storage device, or (2) transfers the selected programming to both an output device and a storage device simultaneously. According to the plaintiffs, the corresponding structure is a processor-based device that controls what programming is selectively transferred to an output device. The plaintiffs say that the specification discloses at least two approaches for a receiver station that can receive a television program transmission: (1) the programming is selected through a processor-based device controlling a tuner or converter box, and (2) the programming is selected through a processor-based device controlling a matrix switch. As for the first approach, the plaintiffs say, the corresponding structure may include signal processor 200 or microcomputer 205, and in the second approach, may include signal processor 200, microcomputer 205, signal processor 71 or computer 73. The plaintiffs urge that identification of the correct corresponding structure requires examination of all the embodiments described in the specification so that the disputed term is given its correct scope. Plaintiffs' Opening *Markman* Brief at 72-76.

According to the defendants, the plaintiffs improperly read "selectively" to modify "programming" rather than "transferring." The defendants contend that the claim language clearly recites "transferring said programming" which they say refers to the previously selected television programming. The defendants urge that the corresponding structure disclosed in the specification is the matrix switch 75 operating under the control of computer 73 using the program unit identification code and equivalents thereof. Defendants' Opening *Markman* Brief at 78-79.

b) Discussion

This term uses the words "means" followed by a recited function, and thus presumptively should be construed as a means-plus-function limitation under § 112(6). The claim does not recite sufficient structure for performing the function, and so the presumption has not been rebutted. Ac-

cordingly, this limitation should be construed as under § 112(6). The recited function is “transferring said programming selectively from a television programming receiver to a television programming output device or storage device.”

The dispute regarding the function concerns whether the word “selectively” modifies “transferring” or whether it modifies “programming.” The plaintiffs contend that claim 15 only discusses selecting programming, and that this term is no exception. Plaintiffs’ Reply Brief at 22. The defendants urge that “selectively” modifies “transferring.”

In short, the defendants are correct. Claim 15 calls for a “method for identifying and selecting television programming in a system ***.” That “system” is then set forth in the remainder of the preamble, and includes:

[1] a processor for receiving and processing at least part of the television programming transmission,

[2] a means for transferring said programming selectively from a television programming receiver to a television programming output device or storage device, and

[3] a controller for receiving information from said processor and for controlling said means for transferring on the basis of at least some of said information.
[Numbering and paragraphing added.]

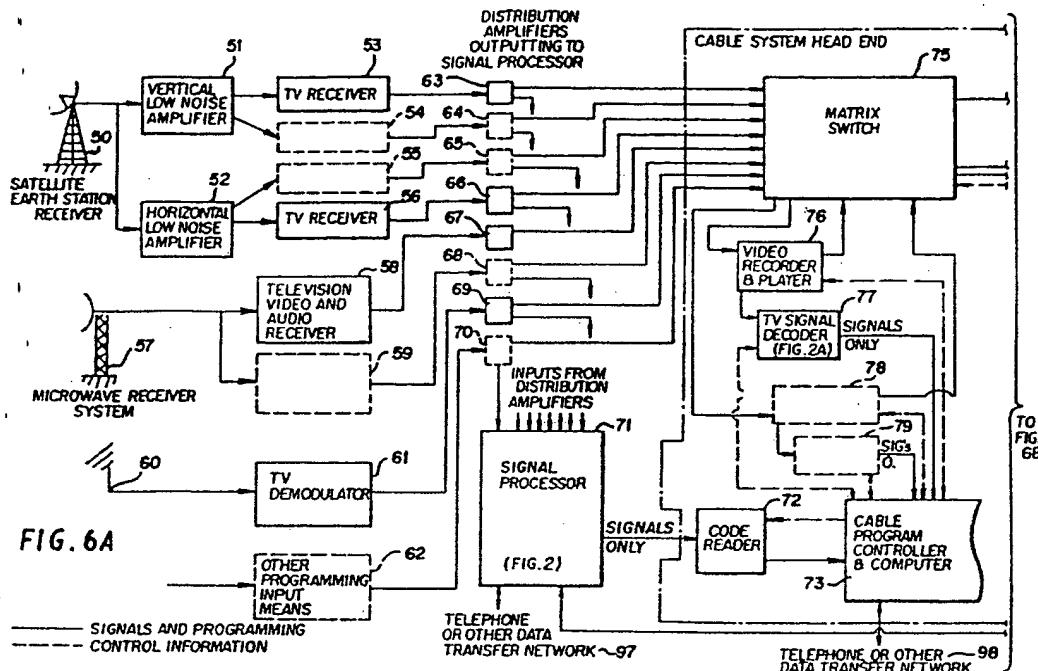
The “said programming” thus refers to the “television programming” that the method identifies and selects. Grammatically, the word “selectively” modifies “transferring,” not “said programming” for at least two reasons: (1) the adverb form of the word “selectively,” as identified by use of the “ly” suffix,⁸⁹ and (2) the position of the word “selectively” in the phrase after the word, which confirms that “selectively” is used as an adverb.⁹⁰

⁸⁹ “An adverb can modify a verb, an adjective, another adverb, a phrase, or a clause. An adverb indicates manner, time, place, cause, or degree and answers questions such as ‘how,’ ‘when,’ ‘where,’ ‘how much.’” <http://www.uottawa.ca/academic/arts/writcent/hypergrammar/adverbs.html> (last visited June 8, 2004).

⁹⁰ Although adjectives may also use the “ly” suffix, e.g., “lovely,” viewing the word “selectively” as an adjective of “programming” makes the phrase unclear. See <http://webster.commnet.edu/grammar/adverbs.htm> (last visited June 8, 2004).

The remainder of the claim is consistent with the foregoing construction. According to the claim body, the method involves in general terms, *inter alia*, "inputting at least part of a television programming transmission [*i.e.*, the programming transmission mentioned in the preamble] to said processor," and then "detecting, locating or identifying" certain data in that transmission, and then using that data to "enable" the controller "[1] select at least a portion of said specific television program unit and [2] cause said means for transferring to transfer information of said selected portion to said television programming output device or storage device." Thus, a "selected portion" of the television programming is transferred either to an output device or to a storage device. Based on the recited function for the "means," that transferring is done "selectively." In all, there are two "selections:" (1) selecting at least a portion of the specific television program unit and (2) selecting where to transfer that selected portion. Furthermore, contrary to the plaintiffs' assertion, the word "selectively" means that Harvey *et al.* used the word "or" to indicate alternatives and not in the Boolean logical sense of "and/or." *See* Plaintiffs' Opening *Markman* Brief at 73.

The next task is to determine the "corresponding structure" disclosed in the specification for performing that function. In the "intermediate transmission station" context, pointed to by the defendants and depicted in pertinent part in Fig. 6A:



the "corresponding structure" appears to be matrix 75 operating under the control of computer 73:

Computer, 73, has means for communicating control information with matrix switch, 75, and video recorders, 76 and 78, and can cause selected programming to be transmitted to field distribution system, 93, or recorded. [Emphasis added.]

Id. at col. 184, lines 10-14.

With respect to transferring to a "television programming output device," Harvey *et al.* explain:

Determining that particular incoming programming is scheduled for immediate retransmission can cause computer, 73, to cause matrix switch, 75, to configure its switches so as to transfer said incoming programming to a scheduled output channel. For example, computer, 73, receives a given SPAM message that contains given "program unit identification code" information and the added source

mark information of said message identifies distribution amplifier, 63. Receiving said message causes computer, 73, to determine, in a predetermined fashion, that said "code" information matches particular preprogrammed schedule information of programming that is scheduled to be retransmitted immediately upon receipt to field distribution system, 93, via cable channel modulator, 87. In its preprogrammed fashion, so determining causes computer, 73, to cause matrix switch, 75, to configure its switches so as to transfer the programming transmission inputted (via distribution amplifier, 63) to matrix switch, 75, from TV receiver, 53, to that output of matrix switch, 75, that outputs to modulator, 87. [Emphasis added.]

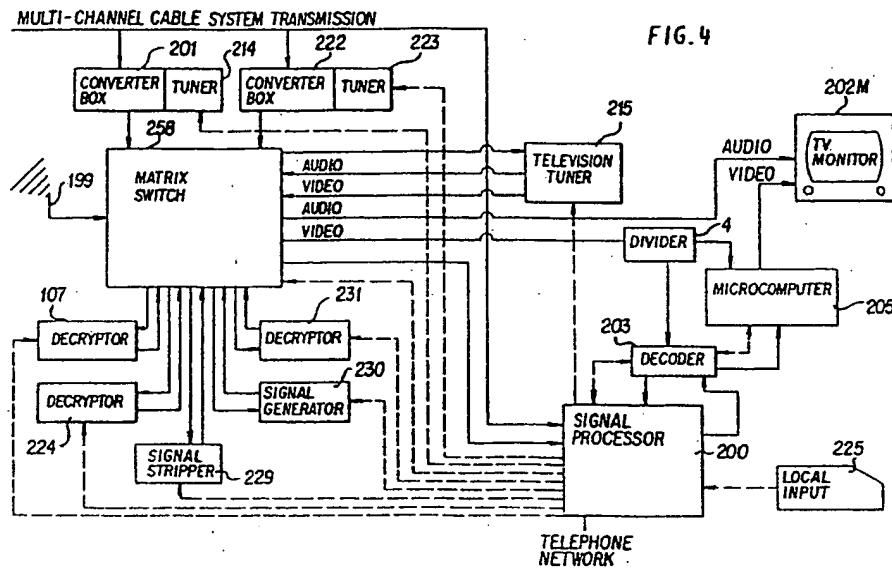
Id. at lines 15-35.

As for transferring to a "storage device," Harvey *et al.* explain:

Determining that particular incoming programming is scheduled for time deferred transmission can cause computer, 73, to cause the recording of said programming. For example, computer, 73, receives a given SPAM message that contains given "program unit identification code" information and the added source mark information of said message identifies distribution amplifier, 67. Receiving said message causes computer, 73, to determine, in a predetermined fashion, that said "code" information matches particular preprogrammed schedule information of programming that is scheduled to be recorded upon receipt and transmitted to the field system, 93, at a later time. So determining causes computer, 73, in its preprogrammed fashion, to select a video recorder/player, 76 or 78; to cause said selected recorder, 76 or 78, to turn on and record programming; and to cause matrix switch, 75, to configure its switches so as to transfer the programming transmission inputted (via distribution amplifier, 67) from television receiver, 58, to the output that leads to said selected recorder, 76 or 78. In so doing, computer, 73, causes said selected recorder, 76 or 78, to record said programming. [Emphasis added.]

Id. at lines 36-57. Thus, the "corresponding structure" in that embodiment is the matrix switch 75 operating under control of the computer 73.

As for the "corresponding structure" in other embodiments, Harvey *et al.* does not appear to disclose structure that accomplishes the function of "transferring *** [to a] storage device" in the "signal processing programming reception and use regulating system" of Fig. 4:



According to Harvey *et al.*, "[t]he subscriber station of FIG. 4 has capacity for receiving wireless television programming transmissions at a conventional antenna, 199, and a multi-channel cable transmission at converter boxes, 201 and 222. Said boxes, 201 and 222, are conventional cable converter boxes with capacity, well known in the art, for receiving information of a selected channel of a multiplexed multi-channel transmission and converting the selected information to a given output frequency. The selected channels whose information is received at said boxes, 201 and 222 respectively, are selected by tuners, 214 and 223 respectively, which are conventional tuners, well known in the art, each with capacity for tuning to a selected channel. Antenna, 199, and boxes, 201 and 222, transmit their received information to matrix switch, 258, which is a conventional matrix switch, well known in the art, with capacity for receiving multiple inputs and outputting said inputs selectively to selected output apparatus. One apparatus that said switch has capacity for outputting to is television tuner, 215. However, the configuration [of] FIG. 4 differs from the configuration of FIGS. 1 and 3 in that television tuner, 215, outputs its audio and video outputs to said matrix switch, 258, rather than to monitor, 202M, and divider, 4, respectively. Instead, in FIG. 4, it is said switch, 258, that

outputs the information that is input to said monitor, 202M, and divider, 4. FIG. 4 shows five additional devices--three decryptors, 107, 224 and 231, a signal stripper, 229, and a signal generator, 230--associated with matrix switch, 258," but no "storage device." [Emphasis added.] See *id.* at col. 160, line 60 to col. 161, line 21.

The subscriber station embodiment of Fig. 5, however, does appear to include "corresponding structure."

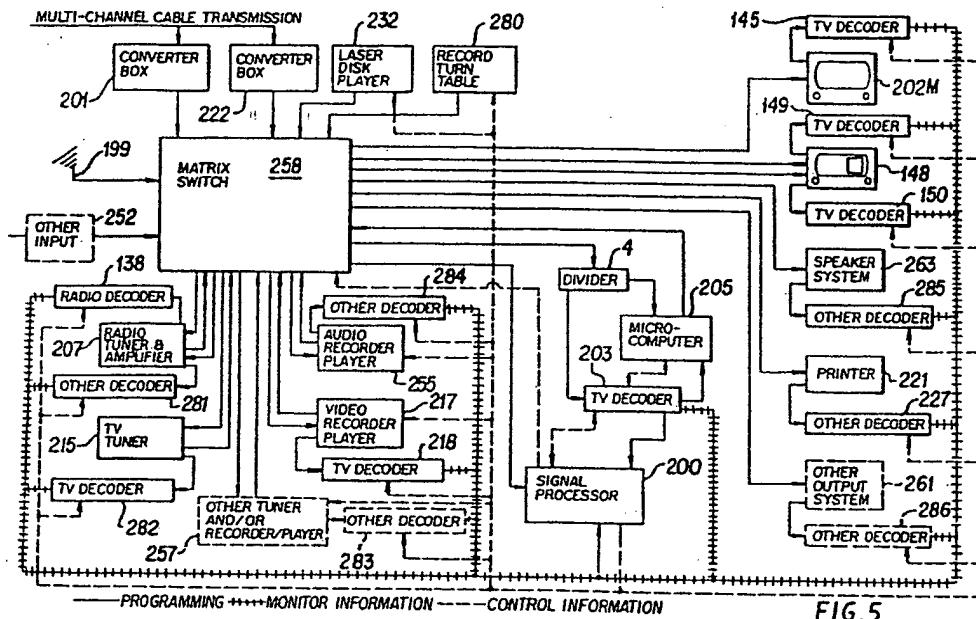
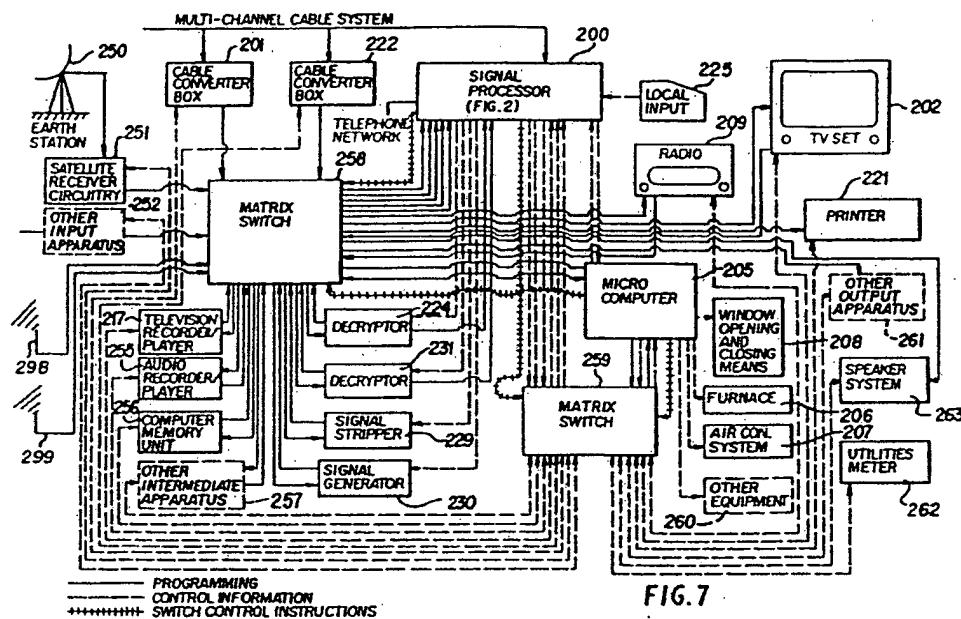


FIG. 5

According to Harvey *et al.*, Fig. 5 "illustrates means and methods for monitoring receiver station reception and use of programming and modes of receiver station operation and exemplifies one embodiment of a subscriber station that is preconfigured and preprogrammed to collect monitor information. * * * * FIG. 5 shows a variety of input apparatus with capacity for inputting programming (including SPAM information) selectively, via matrix switch, 258, to apparatus of the subscriber station of FIG. 5, intermediate apparatus with capacity for processing and/or recording inputted programming selectively, and output apparatus for displaying or otherwise outputting programming selectively to human senses." *Id.* at col. 175, lines 38-65. The matrix switch, of course, is controlled by the signal processor 200. See *id.* at col. 17, lines 50-54 ("In the present invention, the signal processor--26 in FIG. 2; 26 in the signal processor system of FIG. 2D; in the signal processor

system, 71, of FIG. 6; 200 in FIG. 7; and elsewhere--is focal means for the controlling and monitoring subscriber station operations.”). Thus, the “corresponding structure” in the embodiment of Fig. 5 is the matrix switch 258 controlled by the signal processor 200.

Likewise, in the embodiment of Fig. 7, the “corresponding structure” is the matrix switch 258 controlled by the signal processor 200:



According to Harvey *et al.*, Fig. 7 “FIG. 7 exemplifies one embodiment of an ultimate receiver station; is a subscriber station in the field distribution system, 93, of the intermediate transmission station of FIG. 6; and may be a home, an office, a theater, a hotel, or any other station where programming such as television or radio is displayed to persons. * * * FIG. 7 shows a variety of input apparatus with capacity for inputting programming (including SPAM information) selectively, via matrix switch, 258, to other apparatus of the subscriber station of FIG. 7; intermediate apparatus with capacity for processing and/or recording inputted programming selectively; output apparatus for displaying or otherwise outputting programming selectively to human senses; other controlled apparatus; and other meter apparatus.” [Emphasis added.] *Id.* at col. 218, lines 21-47. See also col. 219, lines 9-10 (“All said intermediate apparatus receive their programming inputs from and transmit their programming outputs to matrix switch, 258.”); col. 220, lines 16-35 (“Signal processor, 200, is

the basic SPAM control apparatus of the station of FIG. 7 and has means for communicating control information (from its controller, 20) and SPAM messages (from its controller, 12) with each of said decoders and their associated apparatus. Signal processor, 200, communicates control information directly with decryptors, 224 and 231, signal stripper, 229, signal generator, 230, microcomputer, 205, and matrix switch, 259. Via matrix switch, 259, signal processor, 200, has means for communicating control information individually to all other controlled apparatus including satellite earth station, 250; satellite receiver circuitry, 251; converter boxes, 201 and 222; other input apparatus, 252; radio tuner & amplifier, 213; TV tuner, 215; television recorder/player, 217; audio recorder/player, 255; computer memory unit, 256; other intermediate apparatus, 257; the TV monitor apparatus, 202M, of TV set, 202; the speaker apparatus of radio, 209; printer, 221; speaker system, 263; and other output system, 261." [Emphasis added].

Essentially, the "corresponding structure" common to the various embodiments disclosed by Harvey *et al.* for performing the recited function is a matrix switch operating under the control of a computer or processor. That is, the "transferring" aspect of the function is accomplished with the computer or processor, and the matrix switch operating under computer or processor control causes that transferring to be done "selectively."

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The "means for transferring said programming selectively from a television programming receiver to a television programming output device or storage device" in claim 15 should be construed as a means-plus-function limitation under § 112(6). The recited function is "transferring said programming selectively from a television programming receiver to a television programming output device or storage device." The structure "corresponding" to those functions is a matrix switch operating under the control of a computer or processor.

Under the terms of § 112(6), those limitations should therefore be construed to cover that corresponding structure and equivalents thereof.

19. "identification information of at least one specified television program unit" & "identification data that identified a specific television program unit"

These limitations appear in claim 15 (the disputed term is in boldface):

15. A method for identifying and selecting television programming in a system that is adapted to direct selected television programming to a television programming output or storage, said system including a processor for receiving and processing at least part of the television programming transmission, a means for transferring said programming selectively from a television programming receiver to a television programming output device or storage device, and a controller for receiving information from said processor and for controlling said means for transferring on the basis of at least some of said information, said method comprising the steps of:

inputting to said controller identification information of at least one specified television program unit;

inputting at least part of a television programming transmission to said processor;

detecting, locating or identifying in said part identification data that identified a specific television program unit in said transmission; and

inputting information of said data to said controller, determining based on said program unit information that said specific unit is a specific unit and thereby to enable said controller to select at least a portion of said specific television program unit and cause said means for transferring to transfer information of said selected portion to said television programming output device or storage device.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[i]nformation about a particular television program sufficient to enable the controller to control the means for transferring to transfer the selected television program. The term does not require information that uniquely identifies an individual television program, such as a unique program identifying code.

DEFENDANTS' PROPOSED CONSTR.

A code that identifies a specified discrete unit of television programming (a TV show) transmitted on a given channel." "Identification information" excludes mere channel and time slot data, as such data is not sufficient to identify any particular television program.

Post-Hearing: [no change]

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 77-79; Defendants' Harvey VI Chart at 49, 51; Joint Summary at 46-47.

The parties agree that the phrase "identification data that identified a specific television program unit" should be interpreted consistently with the phrase "identification information of at least one specified television program unit."

According to the plaintiffs, the two key differences between the parties is (1) whether the term is limited to "a code that identifies a specified discrete unit of television programming" and (2) whether the term excludes "mere channel and time slot data." The plaintiffs contend that construction of the disputed term is controlled by a non-precedential 1999 Federal Circuit decision that interpreted very similar language in claim 35 of Harvey VI. The plaintiffs contend that the specification uses the term "information" to embrace many types of information, not just "program units identification code" information. In particular, the plaintiffs urge that "channel and time slot data" should be included in the claimed "identification information." According to the plaintiffs, there is no requirement in the claim that every specified television program unit for which identification information is input actually be received by the claimed system. Plaintiffs' Opening *Markman* Brief at 68-71.

The defendants, on the other hand, urge that the dispute concerns whether channel and time alone are "identification information" as required by the claim. The defendants contend that the plaintiffs' proposed construction reads out the requirement for "identification" and instead provides only "information of a television programming unit," as construed by the 1999 Federal Circuit case. According to the defendants, channel and time information may be "information of" a television program unit, but is not "identification information of" a "specific television program unit." In particular, the defendants say, the specification expressly defines "identification information of at least one specific television program unit" as the "program unit identification code." Defendants' Opening *Markman* Brief at 79-80.

b) Discussion

Again, the focus is on the words of the claim. "Information" *per se* is a broad term generically meaning facts or data,⁹¹ and is clearly not limited to a "code." Indeed, Harvey *et al.* used the word "information" broadly in a number of contexts. For example, "meter-monitor information" includes:

- meter instructions that instruct subscriber station meter apparatus to record particular meter-monitor segment information and maintain meter records of said information;
- origins of transmissions (e.g., network source stations, broadcast stations, cable head end stations);
- dates and times;
- unique identifier codes for each program unit (including commercials);
- codes that identify uniquely each combining in a given combined medium program unit;
- codes that identify the subject matter of a program unit;
- unique codes for programming (other than programming identified by program unit codes) whose use obligates users to make payments (e.g., royalties and residuals); and
- unique codes that identify the sources and suppliers of computer data.

Harvey VI, col. 29, lines 23-41. See *Prima Tek II*, 318 F.3d at 1151 ("The written description makes quite clear that the open-ended examples of 'floral holding material' are merely illustrative; that is, they do not exhaustively delineate the 'floral holding material' that is clearly defined in the claims. The general rule, of course, is that claims of a patent are not limited to the preferred embodiment, unless by their own language. * * * Varied use of a disputed term in the written description demonstrates the breadth of the term rather than providing a limited definition.").

⁹¹ The defendants agree, as is evident above in construction of the term "input means for inputting member information."

Defendants urge, though, that "identification information" connotes a code, such as a "program unit identification code," and further say that Harvey *et al.* expressly defined the disputed terms thus:

Computer, 73, has capacity for maintaining records on the station's programming schedule and records on the status of operating apparatus. Computer, 73, has means for receiving input information from local input, 74, and from remote stations via telephone or other data transfer network, 98. Such input information can include the complete programming schedule of the station of FIG. 6, with each discrete unit of programming identified by its own "program unit identification code" information. Such input information can indicate when and how the station should expect to receive each program unit, when and on which channel or channels and how the station should transmit the unit, what kind of programming the unit is--e.g., conventional television, television/computer combined medium programming, etc.--and how the station should process the programming. [Emphasis added.]

Id. at col. 183, lines 14-30. Undoubtedly, "identification information" includes a "program identification code," but Harvey *et al.*'s above explanation is not lexicographic. Harvey *et al.* used the words "identification information" in many contexts other than program units. For example, returning to the "meter-monitor information," Harvey *et al.* explained:

For example, one meter-monitor segment may contain origin of transmission, transmission date and time, and program unit information. A second may contain program unit and combining identification information. The first is transmitted in a format of three specific fields. The second is transmitted in a different format. It is even possible for different formats to exist for the same meter-monitor field. [Emphasis added.]

Id. at col. 30, lines 1-8. In another example, Harvey *et al.* disclosed "header-indication information," *see id.* at col. 54, lines 57-61 ("Automatically, said instructions cause controller, 39, to activate the output port that outputs to SPAM-controller, 205C, then compare said information at SPAM-header memory to preprogrammed header-identification information." [Emphasis added]), as well as "header-identification-@14 information" and "monitored-instruction-filled-identification information." *See id.* at col. 100, lines 34-42 ("Receiving said 1st monitor information (#3) causes buffer/comparator, 14, to compare the information, in said 1st information, of the header information that identifies a transmission of monitor information to particular preprogrammed header-identification-@14 information. A match results with particular monitored-instruction-filled-

identification information which causes buffer/comparator, 14, to input said 1st monitor information (#3) to onboard controller, 14A.”). *See also id.* at col. 107, lines 50-51 (“source-identification information”). Indeed, Harvey *et al.* generally described program unit identification information in just that way, *i.e.*, “program unit identification information,” among other “identification information.” *See id.* at col. 140, lines 28-41 (“At said RAM, said control processor, 39], maintains, associated with appropriate channel mark information, monitor information records of the last command containing meter-monitor program identification information inputted via each channel transmission. Said records include program unit identification information. At the outset of the example, no transmission of ‘Wall Street Week’ program unit identification information has yet occurred, and the program unit information associated with the source mark of wireless channel 13 and, separately, with the source mark of cable channel 13 is the unit information of the television programming transmitted immediately before the start of the ‘Wall Street Week’ transmission.” [Emphasis added]). In short, nothing in the written description mandates that “identification information” *per se* be a “code” or places other limits on the term, or requires that the disputed phrase be limited to a “program identification code.” “Identification information” is simply information that identifies, *i.e.*, specifies or name a particular thing or operation. *See WEBSTER’S NINTH NEW COLLEGiate DICTIONARY* 597 (1986)(defining “identify” as “to establish the identity of”). *See also MERRIAM-WEBSTER’S ONLINE DICTIONARY*⁹² (“to establish the identity of b : to determine the taxonomic position of (a biological specimen”); *WEBSTER’S NINTH NEW COLLEGiate DICTIONARY* 597 (1986)(an “identity” is “the distinguishing character or personality of an individual” or “the relation established by psychological identification.”).

With that in mind, the disputed phrase “identification information of at least one specified television program unit” as a whole is readily understandable, and simply means information that specifies at least one particular television program unit. As for the defendants’ “channel and time slot data” argument, again – the disputed phrase is not limited to a particular type of information. Whether a particular type or quantum of information meets this limitation is a question for the later infringement stage – not now.

⁹² <http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=identify> (last visited June 8, 2004).

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The phrase "identification information of at least one specified television program unit" means information that specifies at least one particular television program unit. The phrase "identification data that identified a specific television program unit in said transmission" means data that specifies a particular television program unit in said transmission.

20. "transfer information of said selected portion to said television programming output device or storage device"

This limitation appears in claim 15, below (the disputed term is in boldface):

15. A method for identifying and selecting television programming ***, said method comprising the steps of:

inputting to said controller ***;

inputting at least part of a television programming transmission ***;

detecting, locating or identifying ***; and

inputting information of said data to said controller, determining based on said program unit information that said specific unit is a specific unit and thereby to enable said controller to select at least a portion of said specific television program unit and cause said means for transferring to transfer information of said selected portion to said television programming output device or storage device.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[I]nformation from the television program unit that is selected from the overall television transmission is transferred either to a programming output device, such as a television monitor, speakers, or a printer, or to a storage device, such as a video recorder or digital storage.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

[I]nformation from the television program unit that is selected from the television programming transmission is selectively transferred either to a television programming output device or to a storage device.

Post-Hearing: The term "transfer information of said selected portion" does not require con-

struction.

Plaintiffs' Harvey VI Chart at 80; Defendants' Harvey VI Chart at 55; Joint Summary at 70-71.

b) Discussion

The disputed phrase is readily understandable and really does not require separate construction. In the disputed phrase, the words "said selected portion" refer to information from the television program unit that is selected from the overall television programming transmission, as the plaintiffs point out. As called for in the claim body:

inputting to said controller identification information of at least one specified television program unit;

inputting at least part of a television programming transmission to said processor;

detecting, locating or identifying in said part identification data that identified a specific television program unit in said transmission; and

inputting information of said data to said controller, determining based on said program unit information that said specific unit is a specific unit and thereby to enable said controller to select at least a portion of said specific television program unit and cause said means for transferring to transfer information of said selected portion to said television programming output device or storage device.

the "said selected portion" refers to the "portion of said specific television program unit" selected by the controller. The "said specific program unit" refers to the "specific television program unit in said transmission." Finally, the "said transmission," of course, refers to the "television programming transmission." That is, the "television programming transmission" contains a "specific television program unit," and the controller selects a "portion of said specific television program unit," information of which is transferred to either "said television programming output device" or a "storage device." The term "television programming output device" is readily understandable, and is simply any device that can output television programming. The term "storage device" has been construed above to mean device in which information can be stored.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

In the phrase "transfer information of said selected portion to said television programming output device or storage device," a "television programming output device" is any device that can output television programming. The term "television programming" has been construed to mean everything that is transmitted electronically to entertain, instruct or inform via television.

21. "instruct-to-decrypt signal"

This term appears in claims 16, 19, 22, 23 and 24. Claim 16 is representative, and is reproduced in full below, with the disputed term in boldface:

16. A system for locating an embedded **instruct-to-decrypt signal** out of a plurality of signals embedded in the video of an analog television transmission and enabling a decryptor a [sic] decrypt a portion of the television transmission, said system comprising:

a line receiver for receiving a video signal of an analog television transmission and selecting portions of one or more lines of said video that contain embedded signals, said line receiver capable of changing the specific portions of said video lines that are selected;

a digital detector operatively connected to said line receiver for receiving said selected portions of video lines that contain the embedded signals, detecting the **instruct-to-decrypt signal** in said selected portions;

a decryptor operatively connected to said digital detector for receiving information on the **instruct-to-decrypt signal** from said detector and decrypting a portion of said transmission in response to receiving said information; and

a controller operatively connected to said line receiver for causing said line receiver to change the specific portions of video selected by said line receiver on the basis of a varying location or timing pattern of the signals in the transmission, said controller having access to information on the varying location or timing pattern of the signals in the transmission.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[A]n instruction or command or control signal that enables decryption.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

[A] signal that commands decryption to begin, i.e., that causes decryption, rather than a signal that merely enables decryption to be carried out.

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 81; Defendants' Harvey VI Chart at 58; Joint Summary at 47.

The parties urge that the construction of "instruct-to-decrypt signal" should apply to that term as it appears in claim 19, 22, 23 and 24.

According to the plaintiffs, example 6 of the 1987 specification broadly discloses a signal processing system that receives and processes transmitted instructions that enable the decryption of the encrypted portions of a message. In that example, the plaintiffs say, the encrypted information contains the instruction that enables the decrypter to decrypt the signal by informing it of the proper key, and that it is important that the "instruct to decrypt signal" is a conditional instruction insofar as it results in decryption only if certain conditions are satisfied, such as the receiver station possessing the "key J" needed for decryption. Thus, the disclosed message signal does not directly command or necessarily cause decryption, but merely enables it. According to the plaintiffs, the 1981 specification includes a similarly broad disclosure of the "instruct to decrypt signal." According to the plaintiffs, the defendants improperly rely on other instruct signals from other patent claims that are directed to different aspects of the invention, not the decryption function. Plaintiffs' Opening *Markman* Brief at 76-80.

The defendants urge that the dispute concerns whether the disputed signal must be a self-executing instruction or may be simply enabling information. According to the defendants, their construction is consistent with the dictionary definition for the term "instruct" which is "to give an order or command to." The defendants say that is supported by the intrinsic evidence. Defendants' Opening *Markman* Brief at 80-81.

b) Discussion

The parties once again dispute the import of the words "instruct-to-____" as they pertain to signals. As before, those words are viewed as simply nominative in the same sort of way that the word "first" and "second" in the terms "first processor" and "second processor" are nominative of "processor." In claim 16, for example, Harvey *et al.* called for a "system for locating an embedded instruct-to-decrypt signal out of a plurality of signals embedded in the video * * *." That is, the system locates one signal out of many. Harvey *et al.* could just have easily called the "instruct-to-decrypt signal" the "first signal" or "decrypt signal" or whatever – Harvey *et al.* clearly set forth the function or operation of the signal in the claim. Neither party has pointed to anything that suggests that the term "instruct-to-decrypt signal" is a term of art, or that it is otherwise specifically defined in the written description. Indeed, Harvey *et al.* did not use the term "instruct-to-decrypt" in the specification. The point is that the "instruct-to-decrypt signal" is simply a signal, and had Harvey *et al.* simply used the word "signal," the claims would have made just as much sense.

Harvey *et al.* set out the use or function of the signal in the claims. In claim 16, for example, the "video of an analog television transmission" contains a plurality of embedded signals – at least one of which is the disputed signal:

16. A system for locating an embedded instruct-to-decrypt signal out of a plurality of signals embedded in the video of an analog television transmission and enabling a decryptor a [iz] decrypt a portion of the television transmission, said system comprising:

Harvey *et al.* then call for a "line receiver" that receives the video and, generally speaking, selects portions of that video containing the embedded signals:

a line receiver for receiving a video signal of an analog television transmission and selecting portions of one or more lines of said video that contain embedded signals, said line receiver capable of changing the specific portions of said video lines that are selected;

Harvey *et al.* then call for a “digital detector” that receives those video portions and detects the disputed signal:

a digital detector operatively connected to said line receiver for receiving said selected portions of video lines that contain the embedded signals, detecting the instruct-to-decrypt signal in said selected portions;

Next, Harvey *et al.* call for a “decryptor” to receive “information on” the disputed signal from the digital detector and “decrypt[] a portion of said transmission in response to receiving said information.”

a decryptor operatively connected to said digital detector for receiving information on the instruct-to-decrypt signal from said detector and decrypting a portion of said transmission in response to receiving said information; and

Finally, Harvey *et al.* call for a “controller” that controls the “line receiver.”

a controller operatively connected to said line receiver for causing said line receiver to change the specific portions of video selected by said line receiver on the basis of a varying location or timing pattern of the signals in the transmission, said controller having access to information on the varying location or timing pattern of the signals in the transmission.

In short, Harvey *et al.* state exactly what the disputed signal is used for, and how the recited devices function in response to that signal. The plain language of the claim explains exactly what the signal is used for.

The same may be said for the other claims in which this term is found. For example, claim 19 calls for:

19. A television subscriber station comprising:

a plurality of decryptors, each decryptor capable of decrypting a selected one of a plurality of portions of a television program transmission; and

a processor operatively connected to some of said decryptors for identifying and passing to a selected decryptor an instruct-to-decrypt signal that instructs the selected decryptor to decrypt some of the video portion of said transmission, said instruct-to-decrypt signal comprising a code necessary for the decryption of said program transmission.

In claim 19, Harvey *et al.* state not only what the "instruct-to-decrypt signal" does, i.e., "instructs the selected decryptor to decrypt some of the video portion of said transmission," but also state what the signal is comprised of, namely, "a code necessary for the decryption of said program transmission."

Once again, the disputed signal is expressly defined in the claims. The words "instruct-to-decrypt" do not limit the structure, content or function of the "instruct-to-decrypt signal" beyond what the express language of the claims call for.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The plain language of the claims defines the "instruct-to-decrypt signal."

22. **"line receiver for receiving a video signal of an analog television transmission and selecting portions of one or more lines of said video that contain embedded signals, said line receiver capable of changing the specific portions of said video lines that are selected"**

This phrase also appears in claim 16, which is reproduced in full below, with the disputed phrase in boldface:

16. A system for locating an embedded instruct-to-decrypt signal out of a plurality of signals embedded in the video of an analog television transmission and enabling a decryptor a [sic] decrypt a portion of the television transmission, said system comprising:

a line receiver for receiving a video signal of an analog television transmission and selecting portions of one or more lines of said video that contain embedded signals, said line receiver capable of changing the specific portions of said video lines that are selected;

a digital detector operatively connected to said line receiver * * *;

a decryptor operatively connected to said digital detector * * *; and

a controller operatively connected to said line receiver for causing said line receiver to change the specific portions of video selected by said line re-

ceiver on the basis of a varying location or timing pattern of the signals in the transmission, said controller having access to information on the varying location or timing pattern of the signals in the transmission.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

A "Line Receiver" would be understood by one of ordinary skill in the art to mean "a device which can examine or select one or more of the scan lines in an analog television signal which may carry digital signals."

Someone of ordinary skill in the art would understand that "Selecting Portions of One or More Lines of Said Video that Contain Embedded Signals" consists of ordinary English words, that should be interpreted according to their ordinary usage to mean "accessing or choosing one or more lines or a portion of a line from the video that contain embedded digital signals."

Someone of ordinary skill in the art would understand that the phrase "Changing the Specific Portions of Said Video Lines that are Selected" should be interpreted in accordance with ordinary meaning to be "the line receiver can be controlled or caused to change the lines or portions of a line that it examines for digital signals."

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

[A] device that receives the information of one or more of the lines normally used to define an analog television picture, which lines contain embedded signals. Such a device within the meaning of claim 16 selectively receives the information only of that portion or portions of the overall video transmission that contain embedded signals and passes that information to a digital detector. In addition, such a device, i.e., a line receiver, also is capable of changing the specific portions of the video lines that are selected.

Post-Hearing: "[This term]" means a device that receives the information of one or more of the lines normally used to define an analog television picture, which lines contain embedded signals. Such a device within the meaning of claim 16 selectively receives the information only of that portion or portions of the overall video transmission that contain embedded signals and passes that information to a digital detector. In addition, such a device, i.e., a line receiver, also is capable of changing the specific portions of the video lines that are selected. It does not include a full field receiver.

Plaintiffs' Harvey VI Chart at 96; Defendants' Harvey VI Chart at 61-62; Joint Summary at 48.

According to the defendants, the parties dispute whether the term requires "receiving and selecting" or merely "accessing and examining" lines or portions of the lines, and whether the line receiver receives only the selected lines or portions of lines. The defendants say that its construction is supported by the specification at column 21, lines 40-46. Defendants' Opening *Markman* Brief at 81-82.

The plaintiffs do not address this term in their *Markman* briefs.

b) Discussion

Again focusing first on the language of the claim, a “receiver” is simply a device for receiving electrical signals. *See MODERN DICTIONARY OF ELECTRONICS* 628 (7th ed. 1999)(“a device for the reception and, if necessary, demodulation of electrical signals.”). *See also ILLUSTRATED DICTIONARY OF ELECTRONICS* 432 (3rd ed. 1985)(receiver: “a device or system operated at the end of a communication link and which accepts a signal and processes or converts it for local use.”); *id.* (8th ed. 2001) at 585; *MCGRAW-HILL DICTIONARY OF ELECTRONICS AND COMPUTER TECHNOLOGY* 440 (1984)(receiver: “The complete equipment required for receiving modulated radio waves and converting them into the original intelligence, such as into sounds or pictures, or converting to desired useful information as in a radar receiver.”). The parties have not submitted definitions for “line receiver” *per se*, nor have any been found in the resources at hand.

Despite the lack of an art-recognized definition of “line receiver” *per se*, the claim sets out the functions of the “line receiver,” namely, (1) “receiving a video signal of an analog television transmission” and (2) “selecting portions of one or more lines of said video that contain embedded signals.” The claim also requires that the line receiver be “capable of changing the specific portions of said video lines that are selected.” In other words, with the definition of “receiver” in mind, namely, “a device for receiving electronic signals,” the claim specifies the signals the line receiver receives, namely, “a video signal of an analog television transmission.”

And that is why the defendants’ contention that the “line receiver” “selectively receives the information only of that portion or portions of the overall video transmission that contain embedded signals and passes that information to a digital detector” must be rejected. The plain language of the claim expressly says that the “line receiver” receives “a video signal,” not only the part of the “video signal” that contains embedded signals. That is, the claim calls for “receiving *** and selecting ***,” not “selectively receiving.” Nothing in the language of the claim excludes reception of the entire “video signal;” rather, the claim calls for receiving “a video signal,” and “selecting portions of one or more lines of said video that contain embedded signals.”

The disputed phrase is otherwise clear. As for the plaintiffs’ contention that “selecting portions of one or more lines of said video that contain embedded signals” means “accessing or choos-

ing one or more lines or a portion of a line from the video that contain embedded digital signals," the claim uses the word "selecting" – not "accessing" or "choosing" – and is readily understandable. Furthermore, the claim calls for "selecting portions of one or more lines," not selecting "one or more lines or a portion of a line."

As for the plaintiffs' other contention that "changing the specific portions of said video lines that are selected" means that "the line receiver can be controlled or caused to change the lines or portions of a line that it examines for digital signals," again, that is not what the claim says. The claim uses the words "receiving" and "selecting," not "examining." Again, the claim calls for "portions of one or more lines," not "one or more lines or a portion of a line."

Finally, as for whether this term excludes a "full field receiver" (whatever that is) or not, that is a question for the later infringement stage.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

In the phrase "a line receiver for receiving *** and selecting ***," a "line receiver" is a device for receiving electrical signals. The claim expressly requires that the "line receiver" have two functions: (1) "receiving a video signal of an analog television transmission" and (2) "selecting portions of one or more lines of said video that contain embedded signals." The claim also requires that the "line receiver" be "capable of changing the specific portions of said video lines that are selected."

23. "alter its decryption pattern or technique"

This term appears in claim 17, below (the disputed term is in boldface):

17. A system for controlling a decryptor, said system comprising:

a digital detector for receiving at least a portion of a television program transmission, said program transmission comprising a program and a plurality of signals embedded in said transmission, said detector detecting said signals;

a decryptor operatively connected to said detector for receiving and decrypting said detected signals; and

a controller operatively connected to said decryptor for causing said decryptor to alter its decryption pattern or technique.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[T]he controller can cause the decryptor to alter either the decryption key (pattern) or the decryption algorithm (technique) used to decrypt the signal.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

The term "alter its decryption pattern or technique" requires a change in the decryption algorithm itself or in a plan or model of which the decryptor is preinformed and which determines what bits of a received message are and are not decrypted. This term should be construed to exclude merely changing the decryption key.

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 113; Defendants' Harvey VI Chart at 67; Joint Summary at 49.

The plaintiffs say that the parties agree that the terms "decryption pattern or technique" and "manner of decryption" should be interpreted consistently. The plaintiffs contend that both of those terms should include both a decryption key (pattern) and algorithm (technique), and that the defendants exclude a decryption key. The plaintiffs urge that their proposed construction is consistent with special master Harmon's construction of the term "controller operatively connected to said decrypter for causing said decrypter to alter its decryption pattern or technique," and that the 1981 and 1987 specifications support their construction. In particular, the plaintiffs urge, example 4 of the 1987 specification demonstrates that the disclosed system is capable of changing both its decryption pattern and technique. According to the plaintiffs, the defendants ignore the intrinsic evidence and rely on obscure, non-technical definitions to conclude that the term "pattern" refers not to a decryption key, but to a "plan or model" in which the receiver determines what to decrypt and what not to decrypt. According to the plaintiffs, the opinion of the defendants' expert, Mr. Arnold, is incorrect because it ignores the explicit support set forth in the Harvey specifications demonstrating that "pattern" corresponds to "key." Plaintiffs' Opening *Markman* Brief at 80-84.

According to the defendants, the dispute concerns whether changing a key is "altering a decryption." The defendants urge that a person of ordinary skill would understand that altering the

decryption pattern refers to something more than a key change, *i.e.*, a plan for control of the decrypter in its determination of what bits of a message are to be decrypted and what bits are not to be decrypted, and that is supported by the specification. Defendants' *Markman* Brief at 83-84.

b) Discussion

The parties agree that "decryption" "require[s] a device or method that uses a digital key in conjunction with an associated mathematical algorithm to decipher (render intelligible or usable) digital data that has been enciphered (rendered unintelligible or unusable). These terms do not encompass the descrambling of an analog television transmission." JCCS at 11. Based on the foregoing proposed constructions, the parties also apparently agree that "decryption technique" means "decryption algorithm." The dispute is whether a "decryption pattern" means "decryption key."

Neither party has submitted a dictionary or treatise definition of "decryption pattern" *per se* – or for "decryption key," nor have definitions been located in any of the available references. Accordingly, the term does not appear to be a term of art, as discussed further below. Turning to the individual words, a "pattern," of course, is simply "a plan, diagram, or model to be followed in making things," AMERICAN HERITAGE DICTIONARY 911 (2nd ed. 1985). Although that is not specific to the cryptography context, that is the word Harvey *et al.* nevertheless used. A "key," though, is commonly used in the cryptography context, and is defined in that context as "the set of instructions governing the encipherment and decipherment of messages." MERRIAM-WEBSTER'S ONLINE DICTIONARY.⁹³ Those definitions suggest, at least initially, a difference between a "key" and a "pattern." How a "key" and/or "pattern" fits into the scheme of "encryption," then, requires further review.

Turning to other sources at hand, one source explains that "[e]ncryption is the process of turning a plaintext message into an alternate ciphertext message. The ciphertext message contains all the information of the plaintext message, but is not in a format readable by a human or com-

⁹³ <http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=key> (last visited June 8, 2004).

puter. The inverse process, of extracting the original information, is called decryption, and can only be accomplished by using auxiliary information, called a key.⁹⁴

⁹⁴ <http://encyclopedia.thefreedictionary.com/Encryption%20key> (last visited June 8, 2004). The website SearchNetworking.com explains:

Encryption is the conversion of data into a form, called a ciphertext, that cannot be easily understood by unauthorized people. Decryption is the process of converting encrypted data back into its original form, so it can be understood.

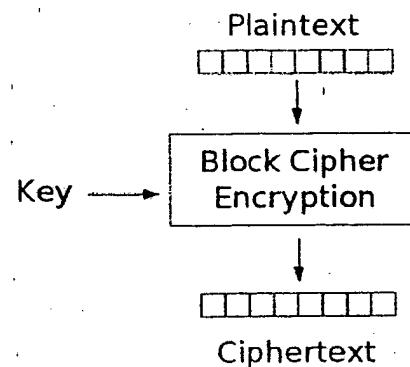
The use of encryption/decryption is as old as the art of communication. In wartime, a cipher, often incorrectly called a "code," can be employed to keep the enemy from obtaining the contents of transmissions. (Technically, a code is a means of representing a signal without the intent of keeping it secret; examples are Morse code and ASCII.) Simple ciphers include the substitution of letters for numbers, the rotation of letters in the alphabet, and the "scrambling" of voice signals by inverting the sideband frequencies. More complex ciphers work according to sophisticated computer algorithms that rearrange the data bits in digital signals.

In order to easily recover the contents of an encrypted signal, the correct decryption key is required. The key is an algorithm that "undoes" the work of the encryption algorithm. Alternatively, a computer can be used in an attempt to "break" the cipher. The more complex the encryption algorithm, the more difficult it becomes to eavesdrop on the communications without access to the key.

Encryption/decryption is especially important in wireless communications. This is because wireless circuits are easier to "tap" than their hard-wired counterparts. Nevertheless, encryption/decryption is a good idea when carrying out any kind of sensitive transaction, such as a credit-card purchase online, or the discussion of a company secret between different departments in the organization. The stronger the cipher -- that is, the harder it is for unauthorized people to break it -- the better, in general. However, as the strength of encryption/decryption increases, so does the cost.

In recent years, a controversy has arisen over so-called strong encryption. This refers to ciphers that are essentially unbreakable without the decryption keys. While most companies and their customers view it as a means of keeping secrets and minimizing fraud, some governments view strong encryption as a potential vehicle by which terrorists might evade authorities. These governments, including that of the United States, want to set up a key-escrow arrangement. This means everyone who uses a cipher would be required to provide the government with a copy of the key. Decryption keys would be stored in a supposedly secure place, used only by authorities, and used only if backed up by a court order. Opponents of this scheme argue that criminals could hack into the key-escrow database and illegally obtain, steal, or alter the keys. Supporters claim that while this is a possibility, implementing the key escrow scheme would be better than doing nothing to prevent criminals from freely using encryption/decryption. [Emphasis added.]

That source provides the following illustration:



Another source equates an encryption "pattern" with a "key":⁹⁵

Encryption in its simplest form is scrambling a message so that it cannot be read until it is unscrambled later by the receiver. The sender uses an algorithmic pattern (or key) to scramble (or encrypt) the message. The receiver has the decryption key. Encryption ensures privacy and confidentiality in transmissions sent over the Internet. [Emphasis added.]

A different source, though, while stating the same thing, seems to draw a distinction between the two, particularly for "asymmetric keys," but indicates that they are related, i.e., the "encryption pattern" is what the "key" is based on:⁹⁶

Encryption in its simplest form is scrambling a message so that it cannot be read until it is unscrambled later by the receiver. The sender uses an algorithmic pattern, or key, to scramble, or encrypt, the message. The receiver has the decryption key. Encryption ensures confidentiality in transmissions sent over the Internet.

There are two kinds of keys that can be used for encryption (as well as for digital signature and authentication): Symmetric [and] Asymmetric

Symmetric keys follow an age-old model of the sender and receiver sharing some kind of pattern. This same pattern is then used by the sender to encrypt the message and by the receiver to decrypt the message. You may have used this model

⁹⁵ IBM Lotus support documents, <http://www-306.ibm.com/software/webservers/dgw/editions.htm> (last visited June 8, 2004). See also RSA Security, <http://www.rsasecurity.com/rsalabs/node.asp?id=2157> (last visited June 9, 2004).

⁹⁶ The Webmaster's Guide, http://dv.bs.dlr.de/Docs/icswgsec.htm#Header_800 (last visited June 8, 2004).

when you decoded the secret message on the back of a cereal box using your secret decoder ring. The risk involved with symmetric keys is that you have to find a safe transportation method to use when sharing your secret key with the people with which you want to communicate.

With asymmetric keys, you create a key pair. The key pair is made up of a public key and a private key, which are different from each other. The private key holds more of the secret encryption pattern than the public key. As a sender, you can then broadcast your public key to whomever you want to communicate securely. You hold on to the private key and protect it with a password. Unlike symmetric keys, the private key and the public key are not the same. As a result, only you can decrypt a message that has been encrypted with your public key, because only you have the private key. [Emphasis added.]

That is, for "symmetric keys," the encryption "pattern" is the same as the "key." For "asymmetric keys," the encryption "pattern," and hence the "key," is different for each party, and each "key" holds a different, or overlapping parts of the "pattern."⁹⁷ Thus far, it appears that in some contexts, the word "pattern" refers to the encryption "key," but in other contexts apparently not. In any case, the term "decryption pattern" is clearly not a term of art. Indeed, the experts of both parties agree in that regard. *See, e.g., Markman* Tr. at 258: 7-19 (direct examination of Plaintiffs' expert, Dr. Stubblebine: "Q. In forming your opinions as to the meaning of the term decryption pattern, did you rely on any dictionary definitions? A. No. Q. Why not? A. I knew it was not a term of the art and, again, going back to the scheduling order, I looked first towards the specification, intrinsic evidence. Okay. Did you find that the specification expressly defined the term decryption pattern? A. No. Q. Did you find that the specification informed the definition of the term encryption pattern? A. Yes. Yes."); Defendants' Opening *Markman* Brief, Exh. 30: Decl. of Mr. Arnold at ¶ 16 ("The term 'pattern of decryption' is not a term of art in cryptography. As a result, definition of this term is de-

⁹⁷ Harvey *et al.* do not appear to have used a "hashing," or one-way, method of encryption, in which there is no separate "key" *per se*. *See* <http://hotwired.lycos.com/webmonkey/00/20/index4a.html> (last visited June 9, 2004) ("When you create a hash, you're only creating a digital summary of the string or file in question. You're not encrypting the string or file, and therefore the string or file can't be decrypted. On most systems, passwords are stored as hashes, so should someone break into your system and grab your password file, said rogue user doesn't necessarily have your passwords, just hashes of the passwords. This begs the questions 'Well then, how does the system match my password when I enter 'banana' and it has stored 'ZTkvRRZNsOUik' in the password file?' It's simple (for once, a simple explanation!): When you enter the password, the system will hash the input, and attempt to match this hashed input to the hash it has stored in the password file. If the two hashes match, you're allowed in."). *See also* <http://www.rsasecurity.com/rsalabs/node.asp?id=2176> (last visited June 9, 2004).

pendant on the context where it is used.”). Thus, it seems that Harvey *et al.* coined that term. Accordingly, the focus turns to the specification.

In their “Summary of the Invention,” Harvey *et al.* used the word “pattern” in connection with encryption/decryption, but not the word “key.” For example, Harvey *et al.* explain:

It is a further purpose of this invention to provide a variety of means and methods for restricting the use of transmitted communications to only duly authorized subscribers. Such means and methods include techniques for encrypting programming and/or instructions and decrypting them at subscriber stations. They also include techniques whereby the pattern of the composition, timing, and location of embedded signals may vary in such fashions that only receiving apparatus that are preinformed regarding the patterns that obtain at any given time will be able to process the signals correctly. [Emphasis added.]

Harvey VI, col. 9, lines 37-47. Then, in that same section, in describing the signal processor, Harvey *et al.* explain:

In the present invention, particular signal processing apparatus (hereinafter called the “signal processor”) detect signals and, in accordance with instructions in the signals and preprogramming in the signal processor, decrypt and/or record and/or control station apparatus by means of the signals and/or discard the signals. The apparatus include one or more devices that can selectively scan transmission frequencies as directed * * *. The frequencies may convey television, radio, or other programming transmissions. The input transmissions may be received by means of antennas or from hard-wire connections. The scanners/switches, working in parallel or series or combinations, transfer the transmissions to receiver/decoder/detectors that identify signals encoded in programming transmissions and convert the encoded signals to digital information; decryptors that may convert the received information, in part or in whole, to other digital information according to preset methods or patterns; and one or more processor/monitors and/or buffer/comparators that organize and transfer the information stream. The processors and buffers can have inputs from each of the receiver/detector lines and evaluate information continuously. * * * [Emphasis added.]

Id. at col. 10, lines 34-58.

In the remainder of the specification, though, and including the “Background of the Invention,” Harvey *et al.* did exactly the opposite: they used the word “key” – as in “decryption key” – in

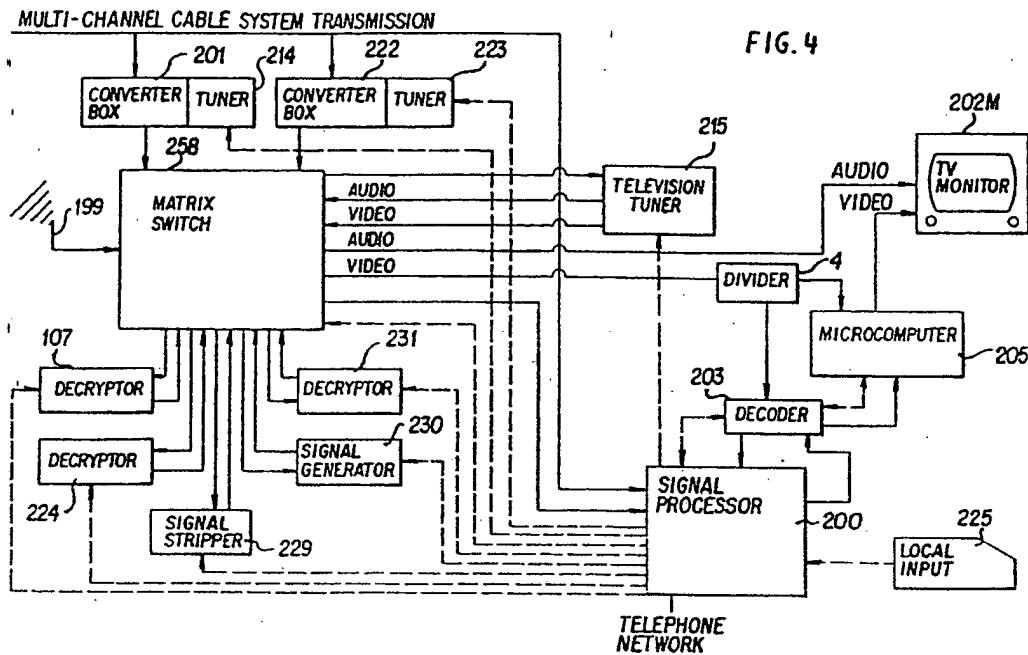
connection with encryption/decryption, not the word "pattern." For example, Harvey *et al.* pointed out that the prior art did not allow decryption:

As regards decoders and decryptors, many different systems exist, at present, that enable programming suppliers to restrict the use of transmitted programming to only duly authorized subscribers. The prior art includes so-called "addressable" systems that have capacity for controlling specific individual subscriber station apparatus by means of control instructions transmitted in broadcasts. Such systems enable broadcasters to turn off subscriber station decoder/decryptor apparatus of subscribers who do not pay their bills and turn them back on when the bills are paid.

This prior art, too, is limited. It has no capacity for decrypting combined media programming. It has no capacity for identifying then selectively decrypting control instructions embedded in unencrypted programming transmissions. It has no capacity for identifying programming transmissions or control instructions selectively and transferring them to a decryptor for decryption. It has no capacity for transferring the output of a decryptor selectively to one of a plurality of output apparatus. It has no capacity for automatically identifying decryption keys and inputting them to a decryptor to serve as the key for any step of decryption. It has no capacity for identifying and recording the identity of what is input to or output from a decryptor. It has no capacity for decrypting a transmission then embedding a signal in the transmission--let alone for simultaneously embedding user specific signals at a plurality of subscriber stations. It has no capacity for distinguishing the absence of an expected signal or controlling any operation when such absence occurs. [Emphasis added.]

Id. at col. 7, lines 13-43.

In describing their invention in the "Signal Processing Programming Reception and Use Regulating System" embodiment depicted in Fig. 4:



Harvey *et al.* explain that the "subscriber station" "configuration FIG. 4 differs from the configuration of FIGS. 1 and 3 in that television tuner, 215, outputs its audio and video outputs to said matrix switch, 258, rather than to monitor, 202M, and divider, 4, respectively. Instead, in FIG. 4, it is said switch, 258, that outputs the information that is input to said monitor, 202M, and divider, 4. FIG. 4 shows five additional devices--three decryptors, 107, 224 and 231, a signal stripper, 229, and a signal generator, 230--associated with matrix switch, 258. Decryptors, 107, 224 and 231, are conventional decryptors, well known in the art, with capacity for receiving encrypted digital information, decrypting said information by means of a selected cipher algorithm and a selected cipher key, and outputting the decrypted information. Signal stripper, 229, is a conventional signal stripper, ***. *** Matrix switch, 258, has capacity for outputting selected inputted transmissions to each said five devices, and each of said devices processes its inputted information in its specific fashion and outputs its processed information to said switch, 258." [Emphasis added.] *Id.* at col. 161, lines 12-41. That is, the decryptors decrypt information by using (1) a "selected cipher algorithm" and (2) a "selected cipher key." Harvey *et al.* further explain that "signal processor, 200, controls all the aforementioned

apparatus. Signal processor, 200, controls the tuning of tuners, 214, 215, and 223; controls the switching of matrix switch, 258; supplies cipher algorithm and cipher key information to and controls the decrypting of decryptors, 107, 224 and 230; controls signal stripper, 229, in selecting transmission locations and/or information to strip and in signal stripping; and controls signal generator, 230, in selecting transmission locations at which to insert signals, in generating specific signals to insert, and in inserting.” [Emphasis added.] *Id.* at col. 161, lines 42-52. In view of the parties’ agreement that the claimed “decryption technique” corresponds to the disclosed “cipher algorithm,” it seems plausible that the claimed “decryption pattern” would correspond to the disclosed “cipher key.” In any case, Harvey *et al.* then describe the process of encryption and decryption in connection with Fig. 4, using the “Wall Street Week” example. With regard to encryption at the “program originating studio,” Harvey *et al.* explain that:

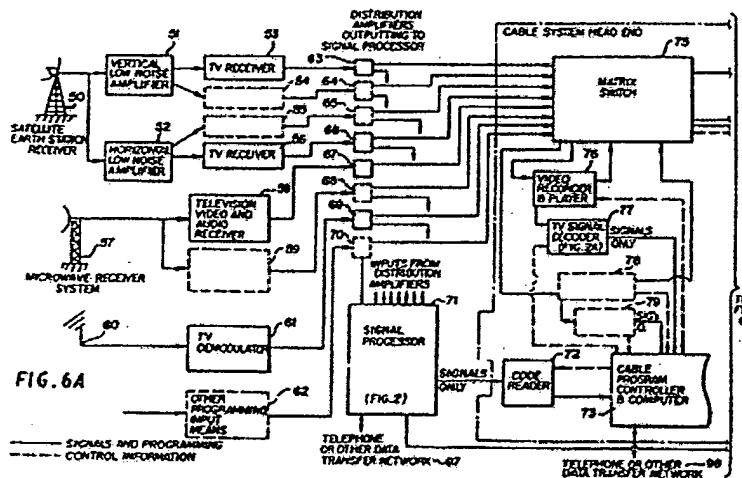
In example #7, the program originating studio that originates the “Wall Street Week” transmission transmits a television signal that consists of so-called “digital video” and “digital audio,” well known in the art. Prior to being transmitted, the digital video information is doubly encrypted, by means of particular cipher algorithms A and B and cipher keys Aa and Ba, in such a way that said information requires decryption at subscriber stations in the fashion described below. The digital audio is transmitted in the clear. [Emphasis added.]

Id. at col. 162, lines 16-25. The encrypted information is transmitted to various “intermediate transmission stations.” “Each of said intermediate transmission stations receives the transmission originated by said studio and retransmits the information of said transmission to a plurality of ultimate receiver stations.” Prior to retransmission, though, according to Harvey *et al.*, the intermediate transmission station “encrypts the digital audio information of said transmission, in a fashion well known in the art, using particular cipher algorithm C and cipher key Ca, then transmits the information of said program on cable channel 13, commencing at a particular 8:30 PM time on a particular

Friday night." *Id.* at lines 30-43.⁹⁸ Thus, prior to final transmission to the subscriber station, the information has been thrice-encrypted with cipher algorithms A, B and C using cipher keys Aa, Ba and Ca.

The information is then transmitted to the subscriber station in the program transmission and detected. For simplicity, only decryption of the "algorithm C encrypted" information will be discussed here. Basically, algorithm C encrypts audio information, algorithm B encrypts video information, etc. Briefly, then, "controller, 20, causes matrix switch, 258, to transfer the information of said audio portion inputted from said tuner, 215, to the output that outputs to a selected decryptor, 107, thereby causing said decryptor, 107, to receive the information of said audio portion (said information being, as explained above, encrypted digital audio). Automatically, controller, 20, selects information of cipher key Ca from among the information of said portion; transfers said cipher key information to decryptor, 107; and causes decryptor, 107, to commence decrypting its received au-

⁹⁸ As discussed previously, the "intermediate transmission station" is depicted in Figs 6A and 6B (reproduced together above). In connection with Fig. 6A, once again:



Harvey *et al.* explain that "[e]xecuting said last named instructions causes said computer, 73, to cause apparatus of said station to receive the transmission of the program originating studio of the 'Wall Street Week' program; to input said transmission, via the matrix switch, 75, of said station, to particular apparatus, well known in the art, that encrypt the audio portion of said transmission and output the video and encrypted audio portions of said transmission in proper synchronization; to cause said apparatus to encrypt the information of said audio portion using a particular preprogrammed cipher algorithm C and cipher key Ca; and to transfer the output of said apparatus, via matrix switch, 75, to field distribution system, 93, via the particular modulator, 82, 86, or 90, of cable channel 13." [Emphasis added.] *Id.* at col. 242, lines 45-59.

dio information, using said key information and selected decryption cipher algorithm C, and outputting decrypted information of the audio portion of the 'Wall Street Week' program transmission to matrix switch, 258. Automatically, controller, 20, causes matrix switch, 258, to transfer the information inputted from decryptor, 107, to the output that that outputs to signal processor, 200 * * *. [Emphasis added.] *Id.* at col. 165, line 68 to col. 18, line 20. Thus, encryption and decryption takes place using (1) a cipher algorithm and (2) a cipher key. Harvey *et al.* do not otherwise mention a "decryption pattern." But again, based on the foregoing portions of the specification, it is more plausible to view a "decryption pattern" as commensurate with a "decryption key," rather than in the sense urged by the defendants. That is, in describing the particulars of the prior art and their invention, Harvey *et al.* generally used the word "key" and "algorithm," but when generally summarizing their invention, they used the word "pattern" and "technique."

The defendants, though, primarily point to a different section of the specification that, in light of Harvey *et al.*'s use of the word "pattern" in the "Summary of the Invention," the defendants say supports their arguments as advanced through their expert, Mr. Arnold. Mr. Arnold, based on the meaning of "pattern" noted above, understands the term "decryption pattern" to mean "a plan, diagram or model to be followed in carrying out decryption," and further understands that the term "could be a reference to operation on either of two levels: (1) a plan or model followed in decrypting given encrypted data or (2) a plan or model for employing (and not employing) decryption." Defendants' Opening *Markman* Brief, Exh. 30: Decl. of Mr. Arnold at ¶ 16. Presumably, level (1) refers to a "decryption key." The defendants urge that "decryption pattern" refers to level (2). Mr. Arnold then points to a part of the specification under the heading "Operating Signal Processor Systems ... Example #2," in which "the first and third messages of the 'Wall Street Week' combining are trans-

mitted just as in example #1, but the second message is partially encrypted.”⁹⁹ Harvey VI, col. 80, lines 63-66. In Example #2, Harvey *et al.* explain that “[t]he second message conveys the second combining sync command. In example #2, before said message is embedded at the program originating studio and transmitted, the execution segment of said command and all of the meter-monitor segment except for the length-token are encrypted, using standard encryption techniques, well known in the art, that encrypt binary information without altering the number of bits in said information. Partially encrypting the second message in this fashion leaves the cadence information of said message unencrypted. In other words, the ‘00’ header, the length-token, and any padding bits added at the end of said message remain unencrypted. Said message is only partially encrypted in order to enable subscriber stations that lack capacity to decrypt said message to process the cadence information of said message accurately. In example #2, the encryption of said execution segment is done in such a fashion that, after encryption, said segment is identical to a particular execution segment that addresses URS signal processors, 200, and instructs said processors, 200, to use a particular decryption key] and decrypt the message in which said segment occurs.” [Emphasis added.] *Id.* at col. 80, line 67 to col. 81, line 22. According to Mr. Arnold, the “standard encryption techniques” disclosed above refers to a decryption algorithm. Mr. Arnold then interprets “encrypt binary infor-

⁹⁹ Example #2 is one of five examples that “illustrate methods of operating signal processing system apparatus. Each focuses on subscriber stations where the signal processor system of FIG. 2D and the combined medium apparatus of FIG. 1 share apparatus and operate in common.” Harvey VI, col. 49, lines 49-53. According to Harvey *et al.*, example #1 “focuses on the basic operation, in ‘One Combined Medium,’ of decoder, 203; SPAM-controller, 205C; and micro-computer, 205. No signals require decryption. No meter information is collected. No monitor information is processed. Combined information is displayed at each subscriber station.” *Id.* at col. 50, lines 19-24. (The “one combined medium” refers, e.g., to video overlays of the ‘Wall Street Week’ example, as in Fig. 1C.)

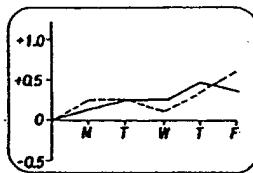


FIG. 1C

In Example #2, “the combining of FIG. 1C occurs only at selected subscriber stations. The second combining sync command is partially encrypted, and said stations are preprogrammed with particular information that is necessary to decrypt said command. At said stations, said command causes its own decryption and the combining of FIG. 1C. In addition, said command causes signal processor apparatus at said stations to retain meter information that a remote billing agency can use as a basis for charging the subscribers of said stations for displaying the combined information of said combining. At all other stations, no information is decrypted, no combining occurs, and no meter information is collected.” [Emphasis added.] *Id.* at lines 25-38.

mation without altering the number of bits in said information" to refer to a "stream cipher algorithm. Defendants' Opening *Markman* Brief, Exh. 30: Decl. of Mr. Arnold at ¶ 17.. Mr. Arnold next explains the "stream cipher algorithm" in some detail, and explains that "[t]he encryption/decryption key is a variable input to the algorithm. Changing the key has the effect of changing the values of the individual bits in the generated bit stream and the resulting cipher text, but it does not change the plan or model followed in encrypting/decrypting any given data, which is fixed by the decryption algorithm (e.g., stream cipher algorithm)." *Id.* at ¶ 18.

Mr. Arnold then explains that "[r]egarding a plan or model for employing or not employing decryption, [Harvey VI] describes that signal processing apparatus of the alleged invention include 'decryptors that may convert the received digital information, in part or in whole, to other digital information according to preset methods or patterns' (col. 10, lines 51-54) (emphasis added) and 'a programmable random access controller ("PRAM controller") that permits revision of operating patterns and instructions.' Col. 11, lines 4-7." *Id.* at ¶ 19. Mr. Arnold then points to column 84, lines 46-58:¹⁰⁰

The process of decryption proceeds in a particular fashion. Said decrypt-a-00-header-message instructions cause controller, 20, to cause decryptor, 10, to transfer the first H bits without decrypting or altering said bits in any fashion, to decrypt and transfer the next X bits, to transfer the next L bits without decrypting or altering said bits, to decrypt and transfer the next MMS-L bits, and finally, to transfer any bits remaining after the last of said MMS-L bits without decrypting or altering said bits. In this fashion, the cadence information in said message, which is not encrypted, is transferred by decryptor, 10, to controller, 12, without alteration.

and concludes: "In my opinion, one of ordinary skill in the art would construe 'decryption pattern' in light of the above disclosure of [Harvey VI], to thus mean a plan or model of which the decryptor

¹⁰⁰ Mr. Arnold also points to col. 130, lines 21-35:

Receiving from controller, 20, the aforementioned key information of J and decrypt-a-00-header-message instructions (that include information of MMS-L) and from matrix switch, 39I, the aforementioned transferred SPAM message information that is complete information of said second message causes decryptor, 39K, to transfer the first H bits of said SPAM information to buffer, 39G, without decrypting or altering said bits in any fashion; to decrypt and transfer the next X bits of said information; to transfer the next L bits without decrypting or altering said bits; to decrypt and transfer the next MMS-L bits; and finally, to transfer any bits remaining after the last of said MMS-L bits without decrypting or altering said bits remaining.

is preinformed and which determines what bits of a received message are and are not decrypted. As such, it is my further opinion that one of ordinary skill in the art would understand 'alter its decryption pattern or technique' to exclude merely changing the decryption key." *Id.* at ¶¶ 19-20.

In evaluating Mr. Arnold's testimony, while Mr. Arnold appears to be well qualified to testify about cryptography, the foregoing portions of the specification do not appear to support the defendants' position. Fundamentally, the defendants urge that Harvey *et al.* used the words "pattern," "instruction" and "key" differently: "However, nowhere in [Harvey VI] does the patentee equate any of these three terms as PMC does. The reason is clear. Each of these three terms meant something different to the patentee." Defendants' Post-Hearing *Markman* Brief at 22. If that is taken as true, *i.e.*, those three terms do in fact mean different things, then the defendants argument, through Mr. Arnold, is inconsistent with that position. Ultimately, Mr. Arnold's explanation, by piecing together different parts of the specification, conflates an "instruction" and a "pattern," and is thus not helpful. *See Dayco Products, Inc. v. Total Containment, Inc.*, 258 F.3d 1317, 1324 (Fed. Cir. 2001) ("If an argument offered in support of a particular claim construction is so convoluted and artificial that it would not be apparent to a skilled artisan reading the patent and the prosecution history, the argument is simply unhelpful to the performance of our task.").

At the outset, the special master is inclined to agree with Mr. Arnold that the term "decryption pattern" could be read on two levels as (1) a decryption key or (2) plan or model for when/whether to decrypt. Thus, the term is ambiguous at least in that regard. But again, Harvey *et al.* appear to have coined the term "decryption pattern," because taken alone, that term means nothing to either expert, nor is it otherwise defined by other sources. As such, then, the claim lacks clarity, and consulting the specification is most appropriate. *See, e.g., Genzyme Corp. v. Transkaryotic Therapies, Inc.*, 346 F.3d 1094 (Fed. Cir. 2003)(the panel majority construed "chromosomally integrated" as being ambiguous and, accordingly, resorted to the specification resulting in a limited construction.); *Altiris*, 318 F.3d at 1372 (In construing the term "automated boot sequence data," the Federal Circuit stated: "This is far from a clear definition. Indeed, it is so broad as to lack significant meaning. The surrounding claim language is similarly unhelpful. * * * This use tells us nothing about what the 'automation code' is; * * *. Thus, we conclude that here the patentee chose a phrase that 'so de-

privates the claim of clarity as to require resort to the other intrinsic evidence for a definite meaning.'"). The parties have done so, and the special master does, as well.

Turning more particularly to Mr. Arnold's opinion, then, it is clear that the PRAM controller "permits revision of operating patterns and instructions," which presumably includes decryption patterns and decryption instructions. Assuming, as the defendants have urged, that a "decryption pattern" is different from a "decryption instruction," Harvey *et al.* does not discuss a "decryption pattern" in the example, *i.e.*, Example #2, considered by Mr. Arnold – rather, Example #2 refers to "instructions." Returning to Example #2, Harvey *et al.* explain that it is the "execution segment" or the "second message" that is partially encrypted, and that such partial encryption "leaves the cadence information of said message unencrypted. In other words, the '00' header, the length-token, and any padding bits added at the end of said message remain unencrypted. Said message is only partially encrypted in order to enable subscriber stations that lack capacity to decrypt said message to process the cadence information of said message accurately." *Id.* at col. 80, line 67 to col. 81, line 15. According to Harvey *et al.* "the encryption of said execution segment is done in such a fashion that, after encryption, said segment is identical to a particular execution segment that addresses URS signal processors, 200, and instructs said processors, 200, to use a particular decryption key J and decrypt the message in which said segment occurs." [Emphasis added.] *Id.* at col. 81, lines 16-21.

Harvey *et al.*'s ensuing explanation of decryption of the encryption signal is lengthy, but generally, the embedded encrypted information is received by decoder 203 (shown in Fig. 3), which determines that the information is directed to the signal processor rather than the microcomputer, and accordingly transfers the information to the signal processor 200, which performs the decryption.

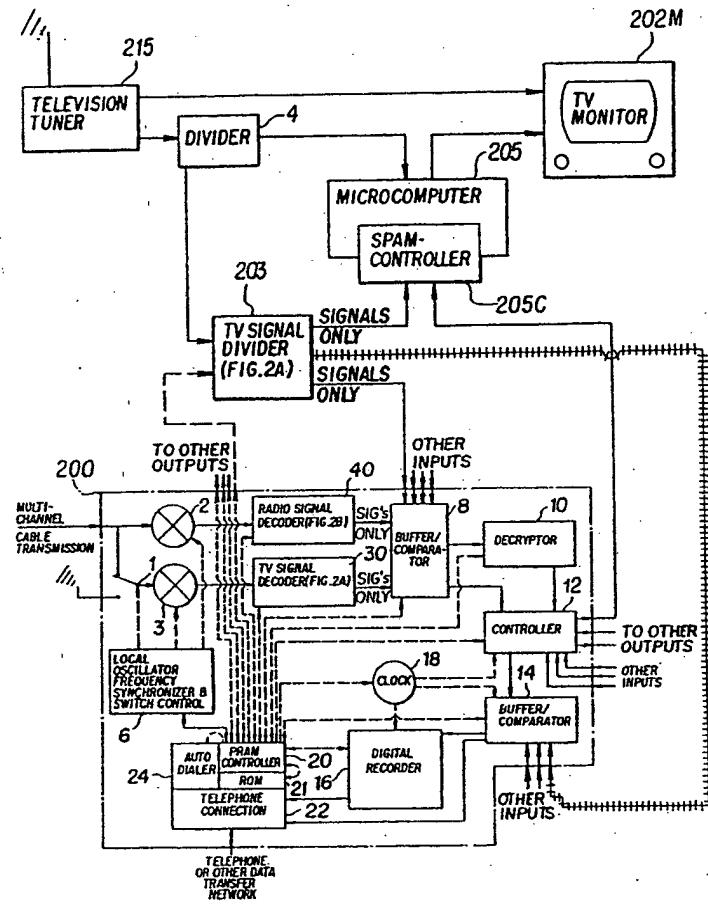


FIG. 3

As noted previously, the signal processor (200) is illustrated in some detail in Fig. 2:

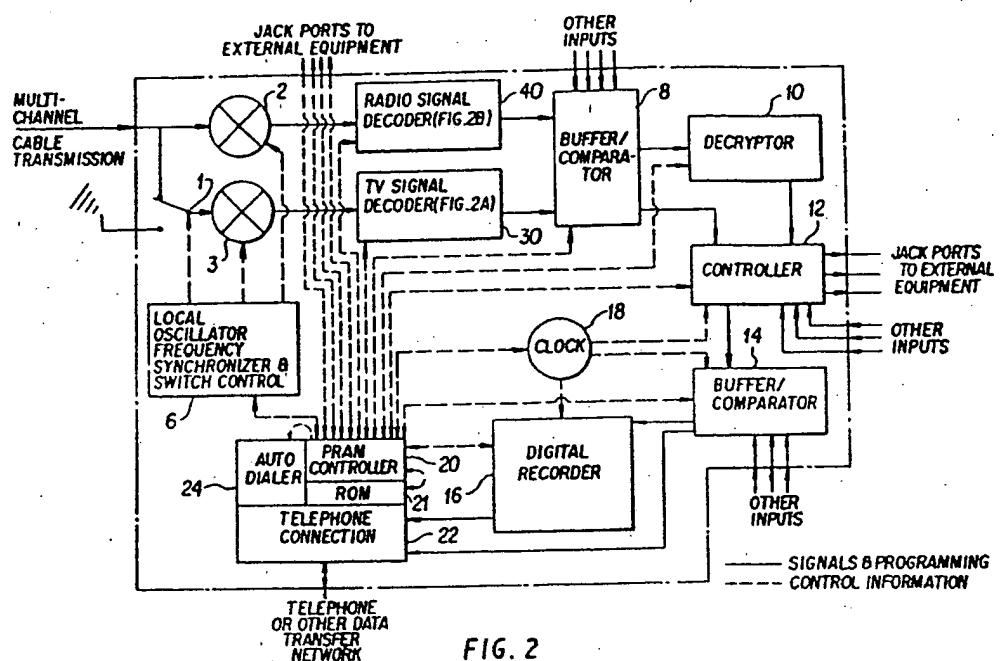


FIG. 2

The encrypted information, when sent to the signal processor, makes its way to buffer/comparator 8. "Receiving the binary signal information of said second message causes buffer/comparator 8, automatically to execute a decryption sequence at signal processor, 200, that is fully automatic and for which all apparatus are preprogrammed." *Id.* at col. 82, lines 35-39. In doing so, the buffer/comparator 8 then first compares the information to "particular preprogrammed comparison information" in the buffer/comparator 8. If a match results, then the buffer/comparator sends to controller 20 "particular decrypt-this-message information that includes the memory position of the first bit location of said particular received signal location and information of the header and execution segment in said binary signal information. Receiving said information causes controller, 20, to compare the information of said execution segment to particular preprogrammed controlled-function-invoking-@200 information and determine a match with particular decrypt-with-key-J information that instructs controller, 20, to decrypt the received binary signal information with decryption key J." Harvey *et al.* explain that "[b]ecause the subscriber station of FIG. 3 is preprogrammed with all information needed to decrypt said second message, the aforementioned match with said decrypt-with-key-J information causes controller, 20, to execute particu-

lar preprogrammed decrypt-with-J instructions. Among said preprogrammed instructions is key information of J, and said instructions cause controller, 20, automatically to select and transfer said key information to decryptor, 10. Decryptor, 10, receives said key information and automatically commences using it as its key for decryption.” [Emphasis added.] *Id.* at col. 82, line 40 to col. 83, line 35.

Harvey *et al.* then provide further detail on how the “instruct-with-J instructions” are processed. According to Harvey *et al.*, the “decrypt-with-J instructions cause controller, 20, to activate the output capacity of buffer/comparator, 8, that outputs to decryptor, 10; to compare said information of the header transferred from buffer/comparator, 8, to particular preprogrammed header-identification-@200 information; and to determine that said information of the header matches particular ‘00’ header information. Said match causes controller, 20, automatically to invoke particular preprogrammed decrypt-a-00-header-message instructions.” In any case, further under those “decrypt-a-00-header instructions,” the controller 20 does more comparisons to determine what information, *i.e.*, “signal words,” to “transfer and place information of said number at particular working-@20 register memory.” “Then said decrypt-a-00-header-message instructions cause controller, 20, to transmit to controller, 12, a particular transfer-decrypted-message instruction and particular decryption mark information of key J that identifies J as the decryption key. Receiving said instruction and information causes controller, 12, to execute particular preprogrammed transfer-and-meter instructions then record said mark of key J at particular decryption-mark-@l2 register memory. Next said decrypt-a-00-header-message instructions cause controller, 20, to cause buffer/comparator, 8, to transfer to decryptor, 10, a quantity of signal words of said binary information of the second message which quantity is the number at said working-@20 register memory.” [Emphasis added.] *Id.* at col. 83, line 36 to col. 84, line 37.

Then, Harvey *et al.* explain, “[b]uffer/comparator, 8, responds by transferring to decryptor, 10, binary information that begins at the first bit at said particular received signal location and transfers said information, signal word by signal word, until it has transferred said quantity of signal words.” Finally, “[d]ecryptor, 10, commences receiving said information, decrypting it using said key J information and transferring it to controller, 12, as quickly as controller, 12, accepts it.” [Emphasis added.] *Id.* at col. 84, lines 38-46.

Next, Harvey *et al.* explain, as particularly noted by Mr. Arnold, that “[t]he process of decryption proceeds in a particular fashion.”

Said decrypt-a-00-header-message instructions cause controller, 20, to cause decryptor, 10, to transfer the first H bits without decrypting or altering said bits in any fashion, to decrypt and transfer the next X bits, to transfer the next L bits without decrypting or altering said bits, to decrypt and transfer the next MMS-L bits, and finally, to transfer any bits remaining after the last of said MMS-L bits without decrypting or altering said bits. In this fashion, the cadence information in said message, which is not encrypted, is transferred by decryptor, 10, to controller, 12, without alteration.

Id. at lines 41-58.

What is clear – if anything is clear – from the foregoing is that the decryption is accomplished using a “decryption key” under preprogrammed instructions, *i.e.*, the “decrypt-a-00-header-message instructions.” Harvey *et al.* do not mention using a “decryption pattern.” The foregoing thus suggests that the preprogrammed instructions correspond to a decryption algorithm, which is consistent with the earlier discussion of the disclosure of the encryption/decryption process using (1) an algorithm and (2) a key. All told, those seem to be the two elements used by Harvey *et al.* to perform the encryption/decryption process. If Harvey *et al.* disclose any “plan or model of decryption,” that “plan or model” is commensurate with the algorithm used. In other words, the “plan or model” of when/whether to decrypt is simply the decryption algorithm – which the parties agree is the claimed “decryption technique.” That also comports with the foregoing general discussion of encryption. Basically, as understood, the defendants seem to posit the “plan or model” of decryption as a higher-level abstraction, *e.g.*, the “plan or model” of public key encryption, that is implemented in a particular algorithm, *e.g.*, the “RSA cryptosystem” algorithm,¹⁰¹ which uses a particular

¹⁰¹ See <http://www.rsasecurity.com/rsalabs/node.aspx?id=2214> (last visited June 9, 2004).

The RSA cryptosystem is a public-key cryptosystem that offers both encryption and digital signatures (authentication). Ronald Rivest, Adi Shamir, and Leonard Adleman developed the RSA system in 1977 [RSA78]; RSA stands for the first letter in each of its inventors' last names.

The RSA algorithm works as follows: take two large primes, p and q, and compute their product $n = pq$; n is called the modulus. Choose a number, e, less than n and relatively prime to $(p-1)(q-1)$, which means e and $(p-1)(q-1)$ have no common factors except 1. Find another number d such that $(ed - 1)$ is divisible by $(p-1)(q-1)$. The values e and d are called the public and private exponents, respectively. The public key is the pair (n, e); the private key is (n, d). The factors p and q may be destroyed or kept with the private key.

decryption key, *e.g.*, the public key provided under the algorithm. As discussed above, Harvey *et al.* disclose and describe the algorithm and key, but apparently do not do so for the “plan or model,” nor do they disclose “altering” a “plan or model.” Indeed, Harvey *et al.* seemed concerned with the practical implementation of decryption, *i.e.*, algorithm and key, rather than the abstraction, *i.e.*, “plan or model.” In the end, Harvey *et al.* did not specify what algorithm to use, or what key to use – they simply used those terms generically to refer to any such key or algorithm – and that disclosure seems broad enough to encompass any “plan or model” using a key and algorithm. That is, even assuming that Harvey *et al.* meant “plan or model” by using the coined term “decryption pattern,” and thereby claimed changing that “plan or model,” that “plan or model,” as coined by Harvey *et al.*, would still have to fall along the lines of what Harvey *et al.* disclosed, *i.e.*, any “plan or model” within the scope of Harvey *et al.*’s claims would at least include an algorithm and a key. Thus, because the plan or model is implemented in whatever algorithm is chosen, changing the “plan or model” effectively means changing the algorithm – which, again, Harvey *et al.* claimed by calling for changing a “decryption technique.” Given the disclosure of the specification, then, the special master is of the view that changing the “plan or model” is effectively included in changing the algorithm as claimed, despite that the “plan or model” is a somewhat broader concept. In sum, the term “decryption pattern” has no accepted meaning in cryptography, and appears to have been coined by Harvey *et al.* That, in view of the multiple definitions for the term posited by Mr. Arnold, requires focusing on the specification in construing the term, as agreed by the parties. In looking to the specification, it is clear that Harvey *et al.* broadly disclosed encryption and decryption with two things, namely, (1) a key and (2) an algorithm, without any discussion of what “plan or model” those two things might be a part of. Thus, while a studio programmer might conceivably change the “plan or model” of encryption/decryption, that would be accomplished – practically speaking – by changing the algorithm,

It is currently difficult to obtain the private key d from the public key (n, e) . However if one could factor n into p and q , then one could obtain the private key d . Thus the security of the RSA system is based on the assumption that factoring is difficult. The discovery of an easy method of factoring would “break” RSA.

Here is how the RSA system can be used for encryption and digital signatures (in practice, the actual use is slightly different):

Suppose Alice wants to send a message m to Bob. Alice creates the ciphertext c by exponentiating: $c = m^e \text{ mod } n$, where e and n are Bob’s public key. She sends c to Bob. To decrypt, Bob also exponentiates: $m = c^d \text{ mod } n$; the relationship between e and d ensures that Bob correctly recovers m . Since only Bob knows d , only Bob can decrypt this message.

and possibly the key. That is, a controller cannot, in practice, "alter its decryption pattern or technique" simply by choosing a different abstract "plan or model" without also doing something at the practical level by, for example, changing the algorithm or key. In short, the phrase "alter its decryption pattern or technique" simply means to alter its decryption key or algorithm.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The phrase "a controller *** for causing said decryptor to alter its decryption pattern or technique" means that the controller can cause the decryptor to alter either the decryption key (pattern) or the decryption algorithm (technique) used to decrypt the signal.

24. "storage device for receiving signals detected in a program transmission and inputting said signals selectively to a decryptor"

This term appears in claim 18 (the disputed term is in boldface):

18. A signal processing system comprising:

a storage device for receiving signals detected in a program transmission and inputting said signals selectively to a decryptor;

a decryptor operatively connected to said storage device for receiving, decrypting, and passing signals to a processor; and

a controller operatively connected to said storage device and said decryptor for causing said storage device to identify and pass a specific signal to said decryptor and causing said decryptor to decrypt said specific signal.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[same as in claim 7, above]

Post-Hearing: [no change re "storage device]
The term "program transmission" means "content which is intended for consumption by a user, such as television programming, radio pro-

DEFENDANTS' PROPOSED CONSTR.

The term "storage device" requires a memory that can store digital information and which is configured not only to "take possession or delivery of" or "to take in" the "signals detected in a program transmission," but also to function to

gramming, broadcast print programming, computer programming, and other forms of data communications directed to a user." "Program transmission" may include, but is not limited to, the programming referred to in the definition of "television program transmission." The inputting of the signals from the storage device may be caused by a controller.

selectively input those signals to a decryptor.

This construction is consistent with the construction of "storage device" set forth above for claim 7.

Post-Hearing: The term "storage device" requires no construction.

Plaintiffs' Harvey VI Chart at 125; Defendants' Harvey VI Chart at 70; Joint Summary at 65-66.

b) Discussion

The term "storage device" as used in claim 18 should receive the same construction as used in claim 7, above, namely, "device in which information can be stored."

As for the term "program transmission," the plaintiffs are correct that the term is broader than a "television program transmission." Harvey *et al.* disclose other types of transmissions, such as radio broadcasts. Broadly speaking, then, a "program transmission" is a transmission of "programming," as the parties have defined that term.

As for the plaintiffs' proposal that "[t]he inputting of the signals from the storage device may be caused by a controller," the claim has no such requirement. According to the claim, the controller is (1) "operatively connected to the storage device and decryptor," (2) causes the storage device to identify and pass a specific signal to the decryptor and (3) causes the decryptor to decrypt the specific signal. The claim does not require or prohibit the controller with regard to inputting signals from the storage device. Thus, the inputting of the signals from the storage device may be caused by a controller, or it may not be. Neither the specification nor the prosecution history requires a different construction.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

A "storage device" is device in which information can be stored. A "program transmission" is a transmission of "programming."

25. "tuner for tuning said receiver to a selected one of the plurality of television program transmissions and of informing a processor of the selected transmission to which said receiver is tuned"

This phrase appears in claim 22:

22. A television subscriber station comprising:

a receiver for receiving a plurality of television program transmissions;

a tuner for tuning said receiver to a selected one of the plurality of television program transmissions and of informing a processor of the selected transmission to which said receiver is tuned;

a decryptor operatively connected to said receiver for receiving, decrypting, and outputting some of said selected television program transmission; and

a processor operatively connected to said tuner and said decryptor, for receiving information transmitted in a selected program transmission, locating or identifying information of an instruct-to-decrypt signal associated with said selected transmission, and identifying and transferring to said decryptor a signal needed for decryption, said processor being programmed with or preinformed of the technique for identifying information of said signal needed for decryption. [Boldface added.]

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[A] circuit or device that can be set to select one signal from a number of signals in a frequency band, such for selecting and controlling the operating frequency of a receiver.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

[A] packaged unit capable of producing only the first portion of the functions of a receiver and delivering either radio-frequency, intermediate frequency, or demodulated information to some other equipment and that also performs the two distinct functions expressly recited in claim 22: (1) tuning the receiver to a selected one of the plurality of television program transmissions; and (2) informing a processor of the selected transmission to which said receiver is tuned.

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 132; Defendants' Harvey VI Chart at 80; Joint Summary at 49-50.

According to the defendants, the dispute concerns whether the "tuner" must inform the processor of the selected transmission to which the receiver is tuned. The defendants say that their

proposed construction is fully supported by the plain language of the claim, and point to the specification's disclosure of "tuning said tuner, 215 in this fashion causes said tuner, 215, to input an interrupt signal with new-channel-input information to the control processor, 39J." Defendants' Opening *Markman* Brief at 84.

The plaintiffs did not address this term in their *Markman* briefs.

b) Discussion

Turning first to the customary meaning of "tuner," one source provides that a "tuner" in the field of electronics is "1. any device or apparatus used for selecting and controlling the operating frequency of a circuit or equipment, such as the channel selector in a television receiver. 2. a unit that selectively accepts radio or television broadcast signals, amplifying and converting them to produce intermediate-frequency or audio-frequency signals to drive other equipment, such as television monitors or audio amplifiers." ACADEMIC PRESS DICTIONARY OF SCIENCE AND TECHNOLOGY 2277 (1992). Clearly, the claim uses tuner in the first sense. Another source defines a "tuner" as "a circuit or device that can be set to select one signal from a number of signals in a frequency band." ILLUSTRATED DICTIONARY OF ELECTRONICS 683 (7th ed. 1997).

The plaintiffs take their proposed construction from the IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONIC TERMS 976 (3rd ed. 1984), which explains:

(1) (radio) receiver. In the broad sense, a device for tuning. Specifically, in the radio receiver practice, it is (A) a packaged unit capable of producing only the first portion of the functions of a receiver and delivering either radio-frequency, intermediate-frequency, or demodulated information to some other equipment, or (b) that portion of a receiver that contains the circuits that are tuned to resonance at the received-signal frequency. *See: radio receiver.*

(2) (transmission line) (waveguide) * * *

Defendants' proposed construction seems more apropos for the radio-receiver context. The "tuner" called for in claim 22 is not so limited, and is actually recited in the television context. Accordingly, that definition is not appropriate for "tuner" as used here.

As for whether the "tuner" performs the function of "informing a processor of the selected transmission to which said receiver is tuned," it appears that is the case. That is, the claim calls for "a tuner" for performing the functions (1) of "tuning said receiver to a selected one of the plurality of television program transmissions" and (2) "of informing a processor of the selected transmission to which said receiver is tuned." While it is true that Harvey *et al.*'s use of the word "of" in front of the "informing a processor * * *" phrase is an awkward grammatical construction, the meaning of the claim is clear.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

A "tuner" is any device or apparatus used for selecting the operating frequency of a circuit or equipment such as a channel selector in a television receiver. In claim 22, the "tuner" performs two functions, namely, (1) tuning said receiver to a selected one of the plurality of television program transmissions and (2) informing a processor of the selected transmission to which said receiver is tuned.

26. "**in a mass medium programming transmission**"

This term appears on claim 24 (the disputed term is in boldface):

24. A method for causing decryption of television or computer programming at a station that includes a decryptor for receiving and decrypting at least part of an encrypted programming transmission in response to information of an instruct-to-decrypt signal; a digital detector for detecting data of a plurality of signal types **in a mass medium programming transmission** and transferring said data to a processor; and a processor operatively connected to said decryptor and said detector for locating or identifying an instruct-to-decrypt signal in said data and transferring information of said signal to said decryptor, with instruct-to-decrypt signals being of a signal type and being transmitted in said transmission in varying locations or in a varying pattern of timing, said method comprising the steps of:

programming said processor with information of a procedure for identifying an instruct-to-decrypt signal in a plurality of signal types or for locating instruct-to-decrypt signals that are transmitted in varying locations or in a varying pattern of timing;

transmitting instruct-to-decrypt signals to said station in varying locations or a varying pattern of timing in a mass medium programming transmission that contains a plurality of signal types;

receiving said programming transmission and transferring at least a portion of said transmission to said detector; ***

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[A] transmission of content which is intended for consumption by multiple users, such as television programming, radio programming, broadcast print programming, computer programming, and other forms of data communications directed to multiple users.

Post-Hearing: The term "mass medium programming transmission" should be construed to mean "a transmission of content which is intended for consumption by multiple users, such as television programming, radio programming, broadcast print programming, and other forms of data communications directed to multiple users. The term 'mass medium programming transmission' includes, but is not limited to, programming in 'television program transmissions' as defined in [Harvey VI] claim 6.

The word "in" is a common English word requiring no construction.

The term "mass medium transmission" recited in other claims should be given a broader interpretation than "mass medium program transmission."

Plaintiffs' Harvey VI Chart at 135-136; Defendants' Harvey VI Chart at 88; Joint Summary at 50-51.

The plaintiffs contend that one key difference between the parties' proposed constructions is that the defendants limit the terms "mass medium programming transmission" and "mass medium transmission" to exclude "a transmission of computer programming." According to the plaintiffs, their proposed construction tracks the ordinary meaning of "mass medium" as expressed in diction-

DEFENDANTS' PROPOSED CONSTR.

[A] transmission of communication (such as newspapers, radio or television), designed to reach the mass of the people, and which contains the same content for every viewer." Further, this term should be construed to exclude a transmission of computer programming.

Post-Hearing: "[M]ass medium programming transmission" means "a transmission of communication (such as newspapers, radio or television), designed to reach the mass of the people, and which contains the same content for every viewer.

This term excludes a general transmission of all types of computer programming; instead, it is limited to a transmission of computer programming that is both (1) broadcast to the receiver stations of a mass audience and (2) executed simultaneously at those stations.

The term "signal types in a mass medium programming transmission" requires that the signals be "embedded" in the "mass medium programming transmission" as defined above.

ary definitions, and is consistent with how the term "mass medium programming" is used in the specification. The plaintiffs urge that one of ordinary skill in the art would understand that "mass medium programming" relates to "programming" that is of a "mass media" character, *i.e.*, intended for consumption by multiple users. According to the plaintiffs, the statement in the specification "but computer processing is not a mass medium" is not a disclaimer as urged by the defendants because that quotation is found in the "background of the invention" section where conventional computer programs that are locally input by specific users are discussed. Thus, the plaintiffs urge, the specification does not disclaim transmitted computer programming from being mass medium, but rather endorses it as being mass medium. Plaintiffs' Opening *Markman* Brief at 85-87.

The defendants, on the other hand, urge that the specification expressly defines "mass media" and clearly defines the context in which computer programs and computer processing can be considered "mass medium" programming, *i.e.*, only computer programs that are "broadcast to and executed simultaneously at the stations of mass user audiences" are "mass medium programming." According to the defendants, that statement relinquished any scope of claim coverage that would encompass "computer processing" that is accomplished at different times at different user stations. Defendants' *Markman* Brief at 85-87.

b) Discussion

There appears to be little or no dispute over what "mass medium" *per se* means. See, e.g., MERRIAM-WEBSTER'S ONLINE DICTIONARY¹⁰² (defining "mass medium" as "a medium of communication (as newspapers, radio, or television) that is designed to reach the mass of the people -- usually used in plural."). That term, though, connotes the type of medium, *i.e.*, one designed to reach a mass of the people as opposed to a medium that cannot reach the mass of people, and does not limit the type or content of the medium. That is, nothing in the plain meaning of "mass medium" requires that the content of the "mass medium" must be the same for everyone. For example, in Texas, English and Spanish newspapers are often sold side-by-side – those newspapers are the same "mass medium," *i.e.*, newsprint, but do not necessarily have the same content. The same may be said for television and other broadcasts. The point is that whether a "medium" *per se* is a "mass me-

¹⁰² <http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=mass+medium> (last visited June 7, 2004).

dium" is defined not by its content, but by its distribution. Neither the specification nor the prosecution history requires a different conclusion. Thus, the defendants' contention that the term requires the same content for every viewer must be rejected.

The real dispute, though, is whether, and to what extent, computer programming may qualify as "mass medium programming." Obviously, the plain language of the words "mass medium programming" are not so limited. Once again, the parties have agreed that "programming" is broadly defined as everything that is transmitted electronically to entertain, instruct or inform, including television, radio, broadcast print, and computer programming as well as combined medium programming. "Mass medium programming," then, is programming communicated in a medium designed to reach the mass of the people, and "mass medium programming transmission" is thus a programming transmission in a medium designed to reach the mass of the people. The defendants say, though, that "mass medium programming transmission" was defined in Harvey VI in the section entitled "Background of the Invention," namely:

Radio and electronic print services such as stock brokers' so-called "tickers" and "broad tapes" are also powerful, user friendly mass media. (Hereinafter, the electronic print mass medium is called, "broadcast print.")

But television, radio, and broadcast print are only mass media. Program content is the same for every viewer. Occasionally one viewer may see, hear, or read information of specific relevance to him (as happens when a guest on a television talk show turns to the camera and says, "Hi, Mom"), but such electronic media have no capacity for conveying user specific information simultaneously to each user.

For years, computers have been recognized as having unsurpassed capacity for processing and displaying user specific information.

But computer processing is not a mass medium. Computers operate under the control of computer programs that are inputted by specific users for specific purposes, not programs that are broadcast to and executed simultaneously at the stations of mass user audiences. And computer processing is far less user friendly than, for example, television. [Emphasis added.]

Harvey VI, col. 2, line 67 to col. 3, line 21,¹⁰³ and thus excludes certain types of computer programming. See Defendants' Post-Hearing *Markman* Brief at 14. That underlined statement, however, clearly does not amount to a lexicographic definition of "mass medium programming." There, Harvey *et al.* were pointing out the deficiencies of the prior art, not defining what their invention could or could not do. As later disclosed, Harvey *et al.*'s invention does provide for broadcasting of computer programs to a mass audience, including simultaneous execution of those programs at the mass audience's subscriber stations, *see generally id.* at col. 287, line 37 *et seq.* But that does not mean that "mass medium programming" must be limited to "simultaneous execution." In fact, Harvey *et al.* suggested to the contrary: "Data and program instructions are often recorded in computer memories at subscriber stations for deferred execution." [Emphasis added.] *Id.* at col. 25, lines 8-10. In order to be "mass medium programming," the computer programming must be transmitted in a "mass medium," but the term "mass medium programming" does not by definition require that mass medium computer programming, once received by the mass audience, must be executed simultaneously. Nor does the specification so limit the term.

With respect to the word "in" as used in the phrase "signal types in a mass medium programming transmission," that word means "embedded," as explained above in connection with construction of the term "in a television program transmission."

The term "mass medium transmission" recited in Harvey *et al.*'s other claims (as well as the other terms using the words "mass medium," namely, "mass medium receiver," "mass medium receiver system," "specific mass medium program content," etc.) should be construed consistently with the foregoing. A "mass medium transmission," therefore, is a transmission in a medium designed to reach a mass of the people.

¹⁰³ That section, incidentally, appears to be the only part of the specification using the terms "mass media" or "mass medium."

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

"Mass medium programming" is programming communicated in a medium designed to reach a mass of the people. A "mass medium programming transmission" is a programming transmission in a medium designed to reach a mass of the people. A "mass medium transmission" is a transmission in a medium designed to reach a mass of the people.

In the phrase "signal types in a mass medium programming transmission," the word "in" means "embedded." "Embedded" means enclosed within or made an integral part of.

27. **"programming said processor with information of a procedure for identifying an instruct-to-decrypt signal in a plurality of signal types or for locating instruct-to-decrypt signals that are transmitted in varying locations or in a varying pattern of timing"**

This phrase appears in claim 24, which is reproduced below in pertinent part (the disputed term is in boldface):

24. A method for causing decryption of television or computer programming ***; said method comprising the steps of:

programming said processor with information of a procedure for identifying an instruct-to-decrypt signal in a plurality of signal types or for locating instruct-to-decrypt signals that are transmitted in varying locations or in a varying pattern of timing;

transmitting instruct-to-decrypt signals ***

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Programming Said Processor with Information of a Procedure For Identifying an Instruct-to-Decrypt Signal in a Plurality of Signal Types or For Locating Instruct-to-Decrypt Signals that are Transmitted in Varying Locations or in a Varying Pattern of Timing" can be broken down into

DEFENDANTS' PROPOSED CONSTR.

[not addressed]

Post-Hearing: "[This term]" requires no construction.

its components and be interpreted as follows:

Someone of ordinary skill in the art would understand that the phrase "Programming . . . with Information of a Procedure for Identifying an Instruct-to-Decrypt Signal in a Plurality of Signal Types" consists of ordinary English words, which should be accorded their ordinary meaning so that the phrase means "the processor is programmed so that it can determine the presence of the Instruct-to-Decrypt Signal which is carried in a transmission having other types of signals."

Someone of ordinary skill in the art would understand that the phrase "Programming . . . with Information of a Procedure . . . for Locating Instruct-to-Decrypt Signals that are transmitted in Varying Locations" would be understood by one of ordinary skill in the art to mean that "the processor is programmed so that it can find the Instruct-to-Decrypt Signal which is transmitted in Varying Locations."

Someone of ordinary skill in the art would understand that the phrase "Programming . . . with Information of a Procedure . . . for Locating Instruct-to-Decrypt Signals that are transmitted . . . in a Varying Pattern of Timing" would be understood by one of ordinary skill in the art to mean that "the processor is programmed so that it can find the Instruct-to-Decrypt Signal which is transmitted in a Varying Pattern of Timing."

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 140-141; Joint Summary at 66-68.

b) Discussion

It is not clear that this limitation is actually in dispute. The language of the phrase is readily understandable. Various constituent terms, such as "instruct-to-decrypt signal," "plurality of signal types," "varying locations," etc., are separately construed herein.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that this phrase does not require further "construction."

28. "said programming transmission"

This term appears in claim 24. The whole claim is reproduced below for reference because the parties dispute the antecedent basis for "said programming transmission:"

24. A method for causing decryption of television or computer programming at a station that includes a decryptor for receiving and decrypting at least part of an encrypted programming transmission in response to information of an instruct-to-decrypt signal; a digital detector for detecting data of a plurality of signal types in a mass medium programming transmission and transferring said data to a processor; and a processor operatively connected to said decryptor and said detector for locating or identifying an instruct-to-decrypt signal in said data and transferring information of said signal to said decryptor, with instruct-to-decrypt signals being of a signal type and being transmitted in said transmission in varying locations or in a varying pattern of timing, said method comprising the steps of:

programming said processor with information of a procedure for identifying an instruct-to-decrypt signal in a plurality of signal types or for locating instruct-to-decrypt signals that are transmitted in varying locations or in a varying pattern of timing;

transmitting instruct-to-decrypt signals to said station in varying locations or a varying pattern of timing in a mass medium programming transmission that contains a plurality of signal types;

receiving **said programming transmission** and transferring at least a portion of **said transmission** to said detector;

detecting data of said plurality of signal types and transferring said data to said processor; and

processing said data to locate or identify an instruct-to-decrypt signal, and identifying or locating at least one instruct-to-decrypt signal, thereby to enable said station to decrypt at least a part of an encrypted programming transmission in response to information of said signal.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Said programming transmission" in the "receiving" step refers to the "mass medium programming transmission" in the immediately prior "transmitting" step.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

The term "said programming transmission" is indefinite, as it is not clear whether this is a reference to the encrypted programming transmission or to the mass medium programming transmission.

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 142; Defendants' Harvey VI Chart at 91-92; Joint Summary at 75.

b) Discussion

The dispute, once again, is proper identification of the antecedent basis for "said programming transmission." As discussed below, the plaintiffs are correct that this term refers to "a mass medium programming transmission."

Claim 24 is drawn to a "method for causing decryption of television or computer programming at a station." The preamble of claim 24, however, describes the structure of that "station" by which the recited method may be accomplished. In particular, claim 24 states that the "station" includes three elements:

[1] a decryptor for receiving and decrypting at least part of an encrypted programming transmission in response to information of an instruct-to-decrypt signal;

[2] a digital detector for detecting data of a plurality of signal types in a mass medium programming transmission and transferring said data to a processor;

[3] and a processor operatively connected to said decryptor and said detector for locating or identifying an instruct-to-decrypt signal in said data and transferring information of said signal to said decryptor, with instruct-to-decrypt signals being of a signal type and being transmitted in said transmission in varying locations or in a varying pattern of timing. [Numbering, emphasis and paragraphing added.]

The element of particular interest here is the "digital detector," which detects "data of a plurality of signal types in a mass medium programming transmission" and transfers the data to the processor.

With that in mind, the method steps, and hence the antecedent basis of "said programming transmission," become clear:

- [1] programming said processor with information of a procedure for identifying an instruct-to-decrypt signal in a plurality of signal types or for locating instruct-to-decrypt signals that are transmitted in varying locations or in a varying pattern of timing;
- [2] transmitting instruct-to-decrypt signals to said station in varying locations or a varying pattern of timing in a mass medium programming transmission that contains a plurality of signal types;
- [3] receiving said programming transmission and transferring at least a portion of said transmission to said detector;
- [4] detecting data of said plurality of signal types and transferring said data to said processor; and
- [5] processing said data to locate or identify an instruct-to-decrypt signal, and identifying or locating at least one instruct-to-decrypt signal, thereby to enable said station to decrypt at least a part of an encrypted programming transmission in response to information of said signal. [Emphasis and numbering added.]

When read in context, "said programming transmission" clearly refers to the "mass medium programming transmission." Again, the preamble explains that the digital detector is "for detecting data of a plurality of signal types in a mass medium programming transmission." The method step of "detecting data of said plurality of signal types," therefore, is clearly accomplished in that digital detector. Again, the "data of said plurality of signal types" is, as first described in the preamble, contained in the "mass medium programming transmission." Detecting such data, then, requires obtaining somehow the transmission in which the data is located – which, in the preceding "receiving" and "transferring" step, is "said programming transmission."

That is, the digital detector detects "data of a plurality of signal types" in "said programming transmission." The only "programming transmission" called for in the claim that contains "data of a plurality of signal types" is the "mass medium programming transmission." Thus, "said programming" refers to the "mass medium programming transmission."

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

In claim 24, the phrase "said programming transmission" refers to the "mass medium programming transmission."

29. "video overlay"

This term appears in claim 44, which is reproduced below in pertinent part, with the disputed term in boldface:

44. A television receiver station system comprising:

a television receiver * * *;

an input device * * *;

a digital detector * * *;

a processor operatively connected to said detector and said input device for generating and outputting information of a **video overlay** that is related to said television programming or said reaction information; and

a television display device operatively connected to said processor for receiving and displaying said **video overlay**.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

DEFENDANTS' PROPOSED CONSTR.

[same as "overlay video signals" in Harvey I, [A] superimposition onto the video component of a television program transmission.
claim 4]

Post-Hearing: [no change, except that "any additional limitations from the prosecution history of the '490 patent, should not apply to this term in the context of [Harvey VI]."]

Post-Hearing: [no change]

Plaintiffs' Harvey VI Chart at 148; Defendants' Harvey VI Chart at 96; Joint Summary at 72.

b) Discussion

The sole issue is whether the prosecution history of Harvey I with respect to "overlay video signals" applies to "video overlay," which the parties otherwise agree should be construed in the same way as "overlay video signal." The answer is yes.

Claim 44 requires, similar to claim 4 of Harvey I, that the "video overlay" be "related to said television programming or said reaction information." That is, the "video overlay" is the same sort of overlay claimed in Harvey I. As noted above, "[w]hen multiple patents derive from the same initial application, the prosecution history regarding a claim limitation in any patent that has issued applies with equal force to subsequently issued patents that contain the same claim limitation." *Elkay Manufacturing*, 192 F.3d at 980. It is true that Harvey VI resulted from a CIP application ultimately stemming from the application that matured into Harvey I, but "an interpretation asserted in the prosecution of a parent application can also affect *** continuation-in-part applications, ***, and even related continuation-in-part applications arising from the same parent ***." *Omega Engineering*, 334 F.3d at 1333.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The term "video overlay" in claim 44 should be construed in the same way as the term "overlay signals" and "overlay video signals" in claims 1 and 4 of Harvey I. The language of claim 44 requires that the "video overlay" must be "related to said television programming or said reaction information."

30. "controlling said decryptor regarding its manner of decryption"

This term appears in claim 46, which is reproduced in pertinent part below for reference (the disputed term is in boldface):

46. A mass medium receiver system comprising:

a mass medium receiver ***;

an input device ***;

a digital detector * * *;

a decryptor for decrypting detected digital information; and

a controller for controlling said decryptor regarding its manner of decryption, said controller controlling said decryptor in response to information inputted by said input device.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[T]he controller determines the decryption key and/or the decryption algorithm used by the decryptor.

Post-Hearing: [no change]

"[C]ontrolling said decryptor in response to said information inputted by said input device" does not need to be construed.

DEFENDANTS' PROPOSED CONSTR.

The term "controlling said decryptor regarding its manner of decryption" should be construed to require control which changes the decryption algorithm itself or changes a plan or model of which the decryptor is preinformed and which determines what bits of a received message are and are not decrypted, and that does not merely change the decryption key.

Post-Hearing: The term "manner of decryption" should be construed to have the same meaning as "decryption pattern or technique." The term should be construed to exclude merely changing the decryption key.

"[C]ontrolling said decryptor in response to information inputted by said input device" means that the control exerted by the claimed controller over the manner of decryption (a change of the decryption algorithm or a change in a plan or model of which the decryptor is preinformed and which determines what bits of a received message are and are not decrypted, and not merely a change of the decryption key) be carried out in response to the viewer reaction information inputted by the recited input device.

Plaintiffs' Harvey VI Chart at 154; Defendants' Harvey VI Chart at 101; Joint Summary at 51-53.

The defendants say that the term "manner of decryption" has the same meaning as "decryption pattern or technique" in claim 17. Defendants' Opening *Markman* Brief at 87-88.

The plaintiffs do not discuss this term in their *Markman* briefs.

b) Discussion

This dispute is the same as that discussed in connection with construction of the term "alter its decryption pattern or technique" above. As discussed there, "decryption pattern or technique" simply means decryption key or algorithm, and that is what the recited "manner of decryption" refers to. And that appears to settle the dispute with respect to the term "controlling said decryptor in response to said information inputted by said input device." The defendants proposed construction must therefore be rejected.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The phrase "a controller for controlling said decryptor regarding its manner of decryption" means that the controller determines the decryption key and/or the decryption algorithm used by the decryptor.

X.
Harvey VII

A. Disclosure

Harvey VII issued from an application that was filed as a continuation of the application maturing into Harvey VI. Thus, Harvey VI and VII share the same specification and drawings. Accordingly, the background and discussion of Harvey VI is applicable to Harvey VII.

B. Summary of the Substantive Prosecution History

Due to its length, the prosecution history for Harvey VII is not extensively summarized here as were the prosecution histories of Harvey I-VI. Rather, the various actions and responses are very briefly summarized. Specific portions of the prosecution history are discussed in more detail as is necessary to resolve the claim construction issues.

1. Original Application – June 7, 1995

Harvey *et al.* filed application¹⁰⁴ Ser. No. 480,060 on June 7, 1995, as a continuation of the application maturing into Harvey VI. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 7 of 7) at PID00003.

2. Preliminary Amendment – June 7, 1995

In a preliminary amendment of June 7, 1995, Harvey *et al.* cancelled the sole pending claim and added new application claim 2. *See id.* at PID00024.

3. Supplementary Preliminary Amendment – December 7, 1995

In a supplementary preliminary amendment of December 7, 1995, Harvey *et al.* cancelled pending application claim 2, and added new application claims 3-33, of which claims 3, 4, 5, 6, 11, 12, 13, 14, 15, 16, 20, 23, 27 and 29 were independent. Harvey *et al.* added those claims with no substantive remarks. *See id.* at PID00024-47.

4. Office Action – January 8, 1997

In a lengthy office action of January 8, 1997, the examiner in charge of Harvey *et al.*'s application rejected all of the claims for (1) double patenting over various of Harvey *et al.*'s issued patents and pending applications, *see id.* at PID00129, -132, -137, and (2) indefiniteness under 35 U.S.C. § 112(2), *see id.* at -143, -146, as well as under § 112(1) for "failing to provide an enabling disclosure," *see id.* at -145. Additionally, the examiner rejected (1) pending claims 3 and 6 under § 102(b) or (e) as anticipated by U.S. Patent No. 4,388,645 to Cox *et al.*, *see id.* at -148, (2) pending claim 16 under § 102(b) as anticipated by U.S. Patent No. 4,225,884 to Block *et al.*, *see id.* at -149, and (3) pending claims 23-26 under § 102(b) or (e) as anticipated by U.S. Patent No. 4,381,522 to Lambert *et al.*, *see id.* at -150. The examiner also noted that pending claims 4, 5, 7-15, 17-19, 20-22 and 27-33 "distinguish over the art." *See id.* at -151.

¹⁰⁴ As an aside, Harvey *et al.* filed a statement listing 329 or so related co-pending applications. *See* Plaintiffs' Opening *Markman* Brief, Apx. F (Vol. 7 of 7) at PID00071.

The examiner also detailed a "series of interviews" held with Mr. Harvey and his counsel. According to the examiner, the interviews generally addressed "issues that are appropriate to all of the related 'Harvey' applications." *See id.* at -151. *See generally id.* at -151-157.

5. Amendment – December 4, 1997

In an amendment dated December 4, 1997, Harvey *et al.* amended all of their pending claims. *See id.* at PID00171-202. Harvey *et al.* also responded to the examiner's rejections under § 112, *see id.* at -205-215, § 102, *see id.* at -215-220, and double patenting, *see id.* at -220-232.

6. Supplemental Response and Amendment – [date unintelligible], 1997

Shortly thereafter, Harvey *et al.* submitted a supplemental response (in the copy of the prosecution history submitted to the special master, the date is illegible) and amendment to replace their amendment of December 4, 1997, in which they further added new application claims 34-47. *See id.* at PID00270-73.

7. Final Office Action – December 23, 1997

In an office action of December 23, 1997, the examiner objected to pending claim 3 based on two informalities, but otherwise allowed the remaining pending claims, namely, claims 4-47. However, the examiner required Harvey *et al.* to submit a terminal disclaimer in each of their pending 329 applications. *See id.* at PID00309-318.

8. Subsequent History

Subsequently, Harvey *et al.* made a number of attempts to avoid the examiner's requirement of a terminal disclaimer, but were ultimately unsuccessful. Thus, all 329 of their pending applications were made subject to a terminal disclaimer. *See id.* at PID00339-522.

C. Agreed Terms

The parties agree that the following terms require no construction: (1) "receiver specific datum," *see* Joint Summary at 75-76, (2) "first remote data source," *see* Joint Summary at 76, and (3) "second remote source," *see id.*

The parties also agree that a "query" is a computer request for information. *See* Joint Summary at 53.

1. "select and process an instruct signal"

This term appears in claim 13 (the disputed term is in boldface):

13. A method of providing data of interest to a receiver station from a first remote data source, said data of interest for use at said receiver station in at least one of generating and outputting a receiver specific datum, said method comprising the steps of:

storing said data at said first remote data source;

receiving at said remote data source a query from said receiver station;

transmitting at least a portion of said data from said first remote data source to said receiver station in response to said step of receiving said query, said receiver station selecting and storing said transmitted at least a portion of said data and;

transmitting from a second remote source to said receiver station a signal which controls said receiver station to **select and process an instruct signal** which is effective at said receiver station to coordinate presentation of said at least a portion of said data with one of a mass medium program and a program segment presentation sequence.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

"Select and Process" should be interpreted according to ordinary usage, which in this context means "the receiver station obtains the instruct signal and acts on the instruct signal."

DEFENDANTS' PROPOSED CONSTR.

To choose one instruct signal from a group of such signals and perform operations in accordance with the chosen instruct signal.

Post-Hearing: [no change]

Post-Hearing: [no change]

Plaintiffs' Harvey VII Chart at 14; Defendants' Harvey VII Chart at 9; Joint Summary at 53-54.

The defendants urge that the "plain and ordinary meanings of these words" is found in dictionary definitions, and that the specification also describes choosing one instruct signal from several such signals. Defendants' Opening *Markman* Brief at 90-91.

b) Discussion

The dispute seems to turn on the meaning of the word "select." Otherwise, the word "process" does not appear to be in dispute. Furthermore, an "instruct signal" is simply a signal that "is effective at said receiver station to coordinate presentation of said at least a portion of said data with one of a mass medium program and a program segment presentation sequence," as the claim calls for.

The word "select," when used as a verb, means "to choose (as by fitness or excellence) from a number or group" or "to pick out." MERRIAM-WEBSTER'S ONLINE DICTIONARY.¹⁰⁵ That implies, of course, that there is more than one signal to choose from. Although the claim does not mention what sort of group the signal is supposed to be chosen from – whether a group of instruct signals, a group of signals in general, or a group of information, or some other group, it must be assumed that the signal is selected from a group of signals of whatever function. Whatever the group, though, the claim makes clear what the criterion for selecting is, namely, that the signal be "effective at said receiver station to coordinate presentation of said at least a portion of said data with one of a mass medium program and a program segment presentation sequence."

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The phrase "select and process an instruct signal" means to choose and process a signal that meets the criterion stated in the claim, namely, a signal that "is effective at said receiver station to coordinate presentation of said at least a portion of

¹⁰⁵ <http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=select> (last visited June 9, 2004).

said data with one of a mass medium program and a program segment presentation sequence."

2. "instruct signal"

This term appears in claim 13 (the disputed term is in boldface):

13. A method of providing data of interest to a receiver station from a first remote data source, said data of interest for use at said receiver station in at least one of generating and outputting a receiver specific datum, said method comprising the steps of:

storing said data at said first remote data source;

receiving at said remote data source a query from said receiver station;

transmitting at least a portion of said data from said first remote data source to said receiver station in response to said step of receiving said query, said receiver station selecting and storing said transmitted at least a portion of said data and;

transmitting from a second remote source to said receiver station a signal which controls said receiver station to select and process an **instruct signal** which is effective at said receiver station to coordinate presentation of said at least a portion of said data with one of a mass medium program and a program segment presentation sequence.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

A signal including an instruction or series of instructions for performing the function recited in this claim.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

A control signal transmitted from the program transmission source to coordinate the presentation of the data of interest with either a mass medium program or a program segment presentation sequence.

Post-Hearing: [no change]

Plaintiffs' Harvey VII Chart at 14; Defendants' Harvey VII Chart at 9; Joint Summary at 54.

According to the defendants, the parties' dispute regarding that term is the same as with "instruct-to-overlay," "instruct-to-transmit," and "instruct-to-generate" signals. In particular, the defendants contend that the instruction signal must come from the program transmission source and

that it must coordinate the presentation of user specific data with program material transmitted to all subscribers. Defendants' *Markman* Brief at 91-92.

b) Discussion

As noted numerous times above, particularly in connection with the various "instruct-to-***" signals, an "instruct signal" is simply a signal. The function of that signal is expressly set forth in the claim, namely, that it "is effective at said receiver station to coordinate presentation of said at least a portion of said data with one of a mass medium program and a program segment presentation sequence." That is all that is required. Again, nothing in the claim requires, as the defendants have urged, that the "instruct signal" must be transmitted from the "program transmission source." Nor, as discussed above in connection with other of the signals, does the intrinsic evidence require that.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The plain language of the claims defines the "instruct signal." The "instruct signal" is not limited to a signal transmitted from the program source.

3. "to coordinate presentation"

This term appears in claims 13 and 14. For reasons which will become clear below, both of the claims are reproduced below in pertinent part for reference (the disputed and related terms are emphasized):

13. A method of providing data of interest to a receiver station ***, said method comprising the steps of:

storing said data at said first remote data source;

receiving at said remote data source a query from said receiver station;

transmitting at least a portion of said data *** and;

transmitting from a second remote source to said receiver station a signal which controls said receiver station to select and process an instruct signal which is effective at said receiver station to coordinate presentation of said at least a portion of said data with one of a mass medium program and a program segment presentation sequence.

14. A method of communicating subscriber station information from a subscriber station *** said method comprising the steps of:

- (1) inputting one of a viewer's and a participant's reaction ***;
- (2) receiving at said subscriber station ***;
- (3) determining the presence of said subscriber input ***;
- (4) processing said instruct signal which is effective to coordinate presentation of at least a mass medium program segment with a predetermined presentation sequence at said subscriber station in consequence of said step of determining; and ***

a) The Parties' Proposed Constructions and Arguments

The parties have, in their post-Markman hearing Joint Summary, separately addressed the term "to coordinate presentation" and the terms "to coordinate presentation ***" as found in claims 13 and 14. For convenience, construction of those terms will be construed together.

PMC/GEMSTAR'S PROPOSED CONSTR.

"Coordinate" should be given its ordinary dictionary meaning, which [is] "to place or arrange (things) in proper position relative to each other. The term 'Coordinate' may relate to time, location (place), fashion of playing, or manner of presentation."

Post-Hearing: The phrase "to coordinate presentation of said at least a portion of said data with one of a mass medium program and a program segment presentation sequence" consists primarily of common English words that do not require a specific definition and that can simply be read to the jury. To the extent the terms "coordinate," "mass medium program," and "program segment presentation sequence" need to be construed, PMC construes those terms as fol-

DEFENDANTS' PROPOSED CONSTR.

To combine the data of interest in relation to time, location, place, fashion of playing, or manner of presentation with the presentation at the subscriber station of a mass medium program segment or a program segment presentation sequence.

Post-Hearing: The phrase "to coordinate presentation of said at least a portion of said data with one of a mass medium program and a program segment presentation sequence" should be construed to mean "to combine the data of interest in relation to time, location, place, fashion of playing, or manner of presentation."

S-A does not define this term separately. However, S-A defines the term "coordinate" to mean

lows:

The term "coordinate" should be construed to mean "to place or arrange (things) in proper position relative to each other. The term "coordinate" may relate to time, location (place), fashion of playing, or manner of presentation.

The term "mass medium program" should be construed consistently with "mass medium programming transmission" in [Harvey VII] claim 24.

The term "program segment presentation sequence" should be construed to mean "a sequence in which program segments are presented."

"to combine in relation to time, location, place, fashion of playing, or manner of presentation."

The term "mass medium program" means "a transmission of communication (such as newspapers, radio or television), designed to reach the mass of the people, and which contains the same content for every viewer."

This term excludes a general transmission of all types of computer programming; instead it is limited to a transmission of computer programming that is both (1) broadcast to the receiver stations of a mass audience and (2) executed simultaneously at those stations.

The term "program segment presentation sequence" should be construed to mean "presentation of a plurality of television program segments (e.g., local program segments) in a sequence.

Plaintiffs' Harvey VII Chart at 14; Defendants' Harvey VII Chart at 13; Joint Summary at 54-56.

The plaintiffs contend that the defendants' proposed construction limits the term "coordinate" to "to combine," i.e., the data of interest must be "combined" with either a mass medium program or a program segment presentation sequence. According to the plaintiffs, the defendants seek to replace "coordinate" with "combine." The plaintiffs, however, contend that there is no basis for excluding the broader definitions of, for example, "to bring into a common action, movement or condition." The plaintiffs also point to the "Wall Street Week" example of the specification in which a series of instructions coordinate the sequential presentation of a subscriber's stock portfolio data with broadcast graphics showing the overall stock market performance, which involves a multi-step, sequential process. The plaintiffs urge that although the parts could be combined, they can also be presented sequentially, as shown in the "Wall Street Week" example. Plaintiffs' Opening *Markman* Brief at 89-91.

According to the defendants, however, the dispute concerns whether the entire transmitted portion of data must be coordinated with the program presentation. The defendants urge that "said at least a portion of said data" in claim 13 refers back to "transmitting at least a portion of said

data,” *i.e.*, the entire “data of interest” transmitted in response to the query. Defendants’ Opening *Markman* Brief at 92.

b) Discussion

Turning first to the “customary” meaning of the disputed terms, the word “coordinate” when used as a verb carries the broad connotation of “to put in the same order or rank,” “to bring into a common action, movement, or condition : harmonize,” “to attach so as to form a coordination complex,” and, in the intransitive senses, “to be or become coordinate especially so as to act together in a smooth concerted way” and “to combine by means of a coordinate bond.” MERRIAM-WEBSTER’S ONLINE DICTIONARY.¹⁰⁶ Another source defines “coordinate” as “[to] bring the different elements of (a complex activity or organization) into a harmonious or efficient relationship,” “(coordinate with) negotiate with (others) in order to work together effectively,” and “[to] match or harmonize attractively.” AskOxford.com.¹⁰⁷ *See also* Bartleby.com¹⁰⁸ (“To harmonize in a common action or effort: coordinating the moving parts of a machine; coordinate the colors of a design.”). From the foregoing, it is clear that “coordinating” can include “combining,” but is clearly not limited to such a narrow connotation. In short, the term “coordinate” carries the connotation that the plaintiffs suggest. *See* MERRIAM-WEBSTER’S ONLINE DICTIONARY¹⁰⁹ (defining “combine” as “to bring into such close relationship as to obscure individual characters : merge”). The parties are correct, though, that “coordinate” may relate to time, location (place), fashion of playing, or manner of presentation. Furthermore, the plaintiffs are correct that “coordinate presentation” encompasses sequential presentations, *i.e.*, coordinated in time. For example, claim 1 of Harvey VII, while not calling for a “coordinated presentation,” calls for a “combined” and a “sequential” presentation:

1. A method of generating and delivering an individualized mass medium program presentation at a receiver station, said receiver station having a receiver for

¹⁰⁶ <http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=coordinate> (last visited June 7, 2004).

¹⁰⁷ http://www.askoxford.com/results/?view=dev_dict&field-12668446=coordinate&branch=13842570&textsearchtype=exact&sortorder=score%2Cname (last visited June 7, 2004).

¹⁰⁸ <http://www.bartleby.com/61/51/C0625100.html> (last visited June 7, 2004).

¹⁰⁹ <http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=combine> (last visited June 7, 2004).

receiving a mass medium program signal, a computer for generating and communicating information, and at least one output device operatively connected to said receiver and said computer for delivering to a viewer a mass medium program and computer information, with said computer comprising at least one data storage location, said method comprising the steps of:

* * * *; and

presenting to a subscriber at a controlled time a mass medium program with locally generated mass medium program information content, with said mass medium program and said locally generated mass medium program information content being outputted to said subscriber as at least one of the following:

- (i) at least one of a combined and a sequential presentation at said at least one output device and
- (ii) parallel presentations at a plurality of said at least one output device.
[Emphasis added.]

The point is that Harvey *et al.* do not exclude sequential presentations from their invention, and there is therefore no reason why the word "coordinate" should not be given its normal broad connotation. Thus, the term "coordinate" should be construed to mean "to place or arrange (elements) in proper position relative to each other," and may relate to time, location (place), fashion of playing, or manner of presentation.

Turning to the remaining arguments, as for the defendants' argument that the entire transmitted portion of data must be coordinated with the program presentation, claim 13 calls for:

13. A method of providing data of interest to a receiver station from a first remote data source, said data of interest for use at said receiver station in at least one of generating and outputting a receiver specific datum, said method comprising the steps of:

storing said data at said first remote data source;

receiving at said remote data source a query from said receiver station;

transmitting at least a portion of said data from said first remote data source to said receiver station in response to said step of receiving said query, said receiver station selecting and storing said transmitted at least a portion of said data and;

transmitting from a second remote source to said receiver station a signal which controls said receiver station to select and process an instruct signal which is effective at said receiver station to coordinate presentation of said at least a portion of said data with one of a mass medium program and a program segment presentation sequence. [Emphasis added.]

The "said at least a portion of said data" that is coordinated refers to the "at least a portion of said data" transmitted to the receiver station in its entirety. The claim does not say that a portion of "said at least a portion of said data" is coordinated, it simply says that "said at least a portion of said data" is coordinated. According to the plain meaning of the claim, then, all of the portion of the data of interest that is transmitted to the receiver station is also coordinated in its entirety.

The special master agrees with the parties that the term "mass medium program" should be construed consistently with the other claims using the words "mass medium." Those terms were construed above in connection with construction of the term "mass medium programming transmission" as in claim 24 of Harvey VI. As discussed there, the defendants proposed limitations on computer programming were rejected. In accordance with that discussion, therefore, a "mass medium program" is a program communicated in a medium designed to reach a mass of the people. The term "program segment presentation sequence" is construed immediately below.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The word "coordinate" means to place or arrange (elements) in proper position relative to each other, and may relate to time, location (place), fashion of playing, or manner of presentation. A "mass medium program" is a program communicated in a medium designed to reach a mass of the people. In the phrase "to coordinate presentation of said at least a portion of said data with one of a mass medium program and a program segment presentation sequence," the phrase "said at least a portion of said data" refers to the entirety of the "at least a portion of said data" transmitted to the receiver station.

4. "program segment presentation sequence"

This term appears in claim 13 (the disputed term is in boldface):

13. A method of providing data of interest to a receiver station ***, said method comprising the steps of:

storing said data at said first remote data source;

receiving at said remote data source a query from said receiver station;

transmitting at least a portion of said data *** and;

transmitting from a second remote source to said receiver station a signal which controls said receiver station to select and process an instruct signal which is effective at said receiver station to coordinate presentation of said at least a portion of said data with one of a mass medium program and a program segment presentation sequence.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

A sequence in which program segments are presented.

Post-Hearing: [no change]

DEFENDANTS' PROPOSED CONSTR.

Presentation of a plurality of television program segments (e.g., local program segments) in a sequence.

Post-Hearing: "[P]rogram segment presentation sequence" means "presentation of television program segments (e.g., local program segments).

Plaintiffs' Harvey VII Chart at 15; Defendants' Harvey VII Chart at 17; Joint Summary at 57.

The plaintiffs urge that the key difference regarding the parties' construction of "program segment presentation sequence" is that the defendants' construction is limited expressly to television programming and even more specifically to "local program segments." According to the plaintiffs, nothing in the intrinsic record or cited definitions requires such restrictions. Plaintiffs' Opening *Markman* Brief at 91-92.

The defendants contend that the "program segments" being referenced are for television. The defendants urge that the "Wall Street Week" example (the only example, the defendants say), "that uses a query as required by this claim" has specific program segments which are presented at

precise times and are coordinated with the presentation of individual stock portfolio information. Defendants' Opening *Markman* Brief at 93.

b) Discussion

On their face, the disputed terms – and, in particular, the word “program” – are not limited to television program segments, and simply connote what the plaintiffs urge. As noted above, for example, the parties agree that the word “programming” means everything that is transmitted electronically to entertain, instruct or inform, including television, radio, broadcast print, and computer programming as well as combined medium programming.

The defendants point, though, to column 14, lines 18-46 of the specification (for context, lines 13-18 have also been reproduced):

While microcomputer, 205, performs these steps, TV monitor, 202M, displays the conventional television image and the sound of the transmitted “Wall Street Week” program. During this time the program may show the so-called “talking head” of the host as he describes the behavior of the stock market over the course of the week. Then the host says, “Now as we turn to the graphs, here is what the Dow Jones Industrials did in the week just past,” and a studio generated graphic is transmitted. FIG. 1B shows the image of said graphic as it appears on the video screen of TV monitor, 202M. Then the host says, “And here is what your portfolio did.” At this point, an instruction signal is generated at said program originating studio, embedded in the programming transmission, and transmitted. Said signal is identified by decoder, 203; transferred to microcomputer, 205; and executed by microcomputer, 205, at the system level as the statement, “GRAPHICS ON”. Said signal instructs microcomputer, 205, at the PC-MicroKey 1300 to overlay the graphic information in its graphics card onto the received composite video information and transmit the combined information to TV monitor, 202M. TV monitor, 202M, then displays the image shown in FIG. 1C which is the microcomputer generated graphic of the subscriber’s own portfolio performance overlaid on the studio generated graphic. And microcomputer, 205, commences waiting for another instruction from decoder, 203.

By itself, the meaning of FIG. 1A is hardly clear. But when FIG. 1A is combined and displayed at the proper time with the conventional television information, its meaning becomes readily apparent. Simultaneously, each subscriber in a large audience of subscribers sees his own specific performance information as it relates to the performance information of the market as a whole. [Emphasis added.]

Specifically, the defendants point to the underlined portions as indicating different program segments of "Wall Street Week." As the foregoing suggests, "program segment" may certainly be a television program segment.

¹ However, Harvey *et al.* describe the same thing for radio programming, also using the "Wall Street Week" example in a section entitled "Audio Overlays And Other Overlays." With reference primarily to Fig. 7D, which Harvey *et al.* explain "illustrates a radio/computer combined medium:"

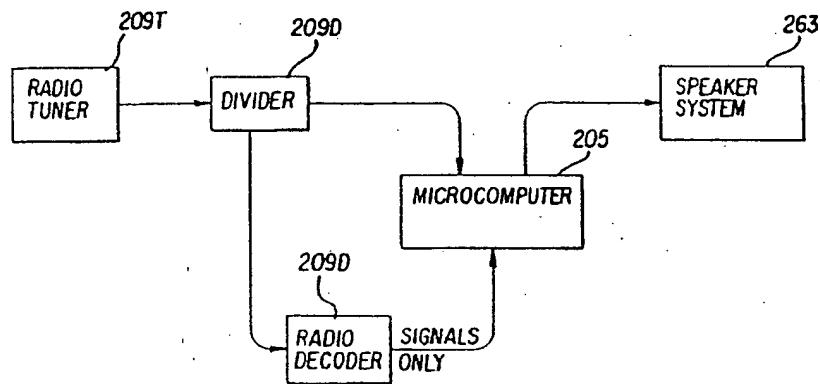


FIG. 7D

Harvey *et al.* describe a radio station that "transmits radio programming at 9:00 PM, immediately following the time at which said 'Wall Street Week' program ends. At each subscriber station, the stock portfolio and closing price data are recorded precisely as at the start of said 'Wall Street Week' program. In the normal transmission location of the radio transmission of said programming, said station embeds and transmits particular SPAM information." Harvey VII, col. 245, lines 5-12. According to Harvey *et al.*, "the transmission of said station is received at tuner, 209T, and inputted to divider, 209D, which inputs the received radio transmission separately to decoder, 211,¹¹⁰ and to microcomputer, 205. Receiving said transmission causes decoder, 211, to detect the SPAM information embedded in said transmission and to input information of said SPAM information to microcomputer, 205, which is preprogrammed to process said inputted information. And receiving said

¹¹⁰ In Fig. 7D, the "radio decoder" is nominated 209D, as is the "divider." Based on the description, it appears that numbering of the "radio decoder" is incorrect.

transmission causes microcomputer, 205, to input said transmission to speaker system, 263, which is caused thereby to emit sound." *Id.* at col. 245, lines 13-23.

Harvey *et al.* next explain that "[i]n due course, said radio station embeds a SPAM message that is analogous to the first message of the 'Wall Street Week' example." According to Harvey *et al.*, "[r]eceiving information of said message causes microcomputer, 205, to record at RAM the digital audio images of three statements made and prerecorded by an announcer," *viz.*

"And the value of your portfolio went up more than the market"

"And your portfolio went up but no faster than the market", and

"But the value of your portfolio went down"

depending on how the subscriber's portfolio performed, in order to accomplish various portfolio and processing tasks, namely:

compute a first value of the subscriber's portfolio as of the close of business of the day before said transmission;

to compute a second value of the subscriber's portfolio as of the close of business of the day of said transmission;

to determine that said first value is greater than said second value;

to clear audio RAM in a clearing fashion well known in the art;

to select information of the audio image, "But the value of your portfolio went down", in a predetermined fashion; and

to transfer said selected information to audio RAM. (Receiving said message causes apparatus of other station to function in their own user specific fashions.)
[Emphasis and paragraphing added.]

Id. at lines 23-42.

Harvey *et al.* then describe using those pre-recorded statements in different radio program segments. First, Harvey *et al.* describe use of one of those statements in the "stock market" segment:

Simultaneously, the audible audio portion of said radio transmission has conveys information of the announcer's voice describing the activity of the stock market and saying, "Stock prices rose today in heavy trading."

Then said radio station transmits an interval of silent audio and embeds, at the beginning of said interval, a SPAM command that causes microcomputer, 205, to generate the synthesized audio of one instance of the image at said audio RAM, to overlay said audio into the transmitted audio, and to transmit the combined audio to speaker system, 263. In so doing, said station causes system, 263, to emit the sound of the announcer's voice saying, "But the value of your stock portfolio went down." (Simultaneously, receiving said message causes apparatus every other station receiving said radio transmission its one selected one of said three statements.) [Emphasis added.]

Id. at lines 43-59. Harvey *et al.* then explain that the same thing may be done in announcing performance of the "bond market" – a different segment:

After an interval of transmitting silent audio that is longer than the longest time required to cause any given subscriber station speaker system, 263, to emit the sound of one of said selected audio images completely, said radio station transmits the audio of said announcer's voice saying, "Now let us turn to the bond markets."

Id. at lines 60-64. Clearly, Harvey *et al.* understood radio programs to involve program segments as well as television programs. Furthermore, Harvey *et al.* disclose the same "Wall Street Week" example in the print broadcasting context, and explain printing out the stock market "information segment" and bond market "information segment." *See id.* at col. 246, lines 16-55. Thus, the defendants' proposed construction limiting the disputed phrase to the television context must be rejected.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The term "program segment presentation sequence" is a sequence in which program segments are presented.

5. "remote data collection station"

This term appears in claim 14:

14. A method of communicating subscriber station information from a subscriber station to at least one **remote data collection stat[ion]**, said method comprising the steps of:

- (1) inputting one of a viewer's and a participant's reaction at said subscriber station;
- (2) receiving at said subscriber station information that designates one of an instruct signal to process and an output to deliver in consequence of subscriber input;
- (3) determining the presence of said subscriber input at said subscriber station by processing said one of a viewer's and a participant's reaction;
- (4) processing said instruct signal which is effective to coordinate presentation of at least a mass medium program segment with a predetermined presentation sequence at said subscriber station in consequence of said step of determining; and
- (5) transferring from said subscriber station to at least one **remote data collection station** an indicium effective to accomplish one of confirming completion of said step of processing and confirming delivery of said coordinated presentation from said step of processing. [Boldface added.]

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

Plaintiffs do not believe that this preamble should be interpreted as a further limitation on Claim 14.

[Otherwise, same as for Harvey V, claim 7].

DEFENDANTS' PROPOSED CONSTR.

A non-local data station for accumulating data.

Post-Hearing: The term "remote data collection station" does not [require] separate construction.

Post-Hearing: [no change]

If the preamble is a limitation, the term "remote data collection stat[ion]" should be construed to mean "a station located outside of the receiver station that collects data from the receiver station."

Plaintiffs' Harvey VII Chart at 21; Defendants' Harvey VII Chart at 21; Joint Summary at 77.

b) Discussion

The issue is whether the preamble of claim 14 is limiting. The answer is no. As discussed above there are a number of "guideposts" for determining whether a preamble is limiting, namely, (1) Jepson claiming (2) dependence on a particular disputed preamble phrase for antecedent basis, (3) the preamble is essential to understand limitations or terms in the claim body, (4) the preamble recites additional structure or steps underscored as important by the specification, (5) clear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art, and (6) preambles describing the use of an invention generally do not limit the claims. *See Catalina Marketing*, 289 F.3d at 808-9. Here, it is clear that the preamble simply serves as a convenient description of the method described in the claim body. *See Storage Technology*, 329 F.3d at 831. The preamble is not drafted in Jepson form, nor do any of the elements require the preamble for antecedent basis, nor does the preamble recite additional method steps. Furthermore, it does not appear that the patentees relied on the preamble to distinguish their invention over prior art. Thus, the preamble should not be deemed limiting. Accordingly, the issue of the meaning of "remote data collection station" is not reached.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The preamble of claim 14 is not limiting.

6. "instruct signal to process"

This term also appears in claim 14:

14. A method of communicating subscriber station information from a subscriber station to at least one remote data collection stat[ion], said method comprising the steps of:

(1) inputting one of a viewer's and a participant's reaction * * *;

- (2) receiving at said subscriber station information that designates one of an instruct signal to process and an output to deliver in consequence of subscriber input;
- (3) determining the presence of said subscriber input * * *;
- (4) processing said instruct signal which is effective to coordinate presentation of at least a mass medium program segment with a predetermined presentation sequence at said subscriber station in consequence of said step of determining; and * * * [Boldface added.]

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

[same as for claim 13 above]

Post-Hearing: [this term is otherwise defined by language in the claim]

DEFENDANTS' PROPOSED CONSTR.

"A control signal transmitted from the program transmission source that coordinates the presentation at the subscriber's station of a mass medium program segment with a predetermined presentation sequence."

Post-Hearing: See discussion of "instruct signal" from * * * claim 13. As for the term "process," see discussion of this term above with respect to "instruct-to-process signal in [Harvey II], claim 1.

Plaintiffs' Harvey VII Chart at 23; Defendants' Harvey VII Chart at 22-23; Joint Summary at 57.

The plaintiffs initially urged that the defendants had added extraneous limitations beyond the claim language, such as restricting a signal to "a control signal," requiring that the signal be "transmitted from the headend," and importing a later-recited function into the ordinary meaning of "instruct signal." The plaintiffs also said that the parties disputed whether an instruct signal can include a series of instructions. The plaintiffs urged that their proposed construction was supported by dictionary definitions, as well as the usage of "instruct signal" in the specification — again pointing to the "Wall Street Week" example. The plaintiffs urged that there was no basis for requiring that the instruct signal must be a control signal or that it must be transmitted from the headend, because the term "headend" does not appear in the claim, nor was such a limitation required by the intrinsic evidence. Additionally, the plaintiffs contended that the limitation "processing said instruct signal which is effective to [perform a specified function]" supports its proposed construction by requiring only that the processing of the signal be effective to perform the function, not control the result.

The plaintiffs contended that the defendants construction erroneously imports the recited function to be performed by the instruct signal into the meaning of the instruct signal itself, and that it is incorrect to add that function to the ordinary meaning of instruct signal because doing so renders the remaining claim language superfluous. Plaintiffs' Opening *Markman* Brief at 93-95. Post-hearing, the plaintiffs contend that the plain language of the claim defines this term, and urge that if construction is necessary, this term should be construed to mean "a signal including an instruction or series of instructions for performing the function recited in this claim." Joint Summary at 57.

The defendants rely on their discussion of "instruct signal" in claim 13 and "instruct-to-process signal" in Harvey II, claim 1. Defendants' Opening *Markman* Brief at 94. The defendants' position does not appear to have changed since the hearing. The defendants specifically re-urge that the disputed signals must be transmitted from the program source "in order to coordinate the presentation at a multiplicity of subscriber computers.

b) Discussion

As with the various other "instruct-to-* * *" signals called for in Harvey *et al.*'s claims, the presently disputed signal is just that — a signal. What the parties dispute is the function of that signal. Here, as with the other "instruct-to-* * *" signals, the plain language of the claim defines that function.

Claim 14 calls for the method step of "receiving at said subscriber station information that designates one of [1] an instruct signal to process and [2] an output to deliver in consequence of subscriber input;" and "processing said instruct signal which is effective to coordinate presentation of at least a mass medium program segment with a predetermined presentation sequence at said subscriber station in consequence of said step of determining."" That is, the "instruct signal" is (1) used "to process" and (2) "effective to coordinate presentation of at least a mass medium program segment with a predetermined presentation sequence at said subscriber station in consequence of said step of determining."

As for the defendants' argument that the "instruct signal" must be transmitted from the "program transmission source," nothing in the claim requires that. Nor, as discussed above in connection with other of the signals, does the intrinsic evidence require that, either.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that:

The plain language of the claims defines the "instruct signal to process" called for in claim 14. The "instruct signal to process" is not limited to a signal transmitted from the program source.

7. **"information that designates one of an instruct signal to process and an output to deliver in consequence of subscriber input"**

This phrase likewise appears in claim 14, below (the disputed term is in boldface):

14. A method of communicating subscriber station information from a subscriber station to at least one remote data collection stat[ion], said method comprising the steps of:

(1) inputting one of a viewer's and a participant's reaction at said subscriber station;

(2) receiving at said subscriber station **information that designates one of an instruct signal to process and an output to deliver in consequence of subscriber input**;

(3) determining the presence of said subscriber input at said subscriber station by processing said one of a viewer's and a participant's reaction;

(4) processing said instruct signal which is effective to coordinate presentation of at least a mass medium program segment with a predetermined presentation sequence at said subscriber station in consequence of said step of determining; and

(5) transferring from said subscriber station to at least one remote data collection station an indicium effective to accomplish one of confirming completion of said step of processing and confirming delivery of said coordinated presentation from said step of processing.

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

PMC does not believe that the phrase "Information that Designates One of an Instruct Signal to

DEFENDANTS' PROPOSED CONSTR.

The term "output to deliver" means "data distributed to a subscriber station in response to the

Process and an Output to Deliver in Consequence of Subscriber Input" requires construction. However, the Court may wish to instruct the jury that "the information designates an output to deliver or a signal that is an instruction to be processed."

Post-Hearing: This phrase should be construed to mean "information that designates an instruct signal to process or an output to deliver."

We agree with the Special Master's suggestion that "instruct signal to process is a signal otherwise defined by language in the claim. If the Special Master determines that a specific construction of that phrase is necessary, Plaintiffs' position is that "instruct signal to process" should be construed to mean "a signal including an instruction or series of instructions for performing the function recited in the claim."

Plaintiffs' Harvey VII Chart at 23-24; Defendants' Harvey VII Chart at 24; Joint Summary at 58, 77.

The defendants urge that although the claim is worded alternatively, unless an instruct signal to process is received, neither of subsequent steps (4) and (5) of the claim can be performed. Defendants' Opening *Markman* Brief at 94-95.

b) Discussion

It is not clear what the dispute is, if any. The parties apparently agree that this term is worded in the alternative, and, at one time or another, each asserted that this term required no construction. Given the apparent lack of any dispute regarding this term, the special master agrees that this term requires no construction.

subscriber's input."

Post-Hearing: The term "information that designates one of an instruct signal to process" does not [require] separate construction.

c) Recommended Construction

In view of the foregoing, therefore, the special master recommends that the Court conclude that no construction is necessary.

8. "indictum effective to accomplish one of confirming completion of said step of processing and confirming delivery of said coordinated presentation from said step of processing"

This phrase appears in claim 14:

14. A method of communicating subscriber station information from a subscriber station to at least one remote data collection stat[ion], said method comprising the steps of:

- (1) inputting one of a viewer's and a participant's reaction at said subscriber station;
- (2) receiving at said subscriber station information that designates one of an instruct signal to process and an output to deliver in consequence of subscriber input;
- (3) determining the presence of said subscriber input at said subscriber station by processing said one of a viewer's and a participant's reaction;
- (4) processing said instruct signal which is effective to coordinate presentation of at least a mass medium program segment with a predetermined presentation sequence at said subscriber station in consequence of said step of determining; and
- (5) transferring from said subscriber station to at least one remote data collection station an indicium effective to accomplish one of confirming completion of said step of processing and confirming delivery of said coordinated presentation from said step of processing. [Boldface added.]

a) The Parties' Proposed Constructions and Arguments

PMC/GEMSTAR'S PROPOSED CONSTR.

Although the Defendants dispute the presence of "An Indictum Effective to Accomplish One of Confirming Completion of Step of Processing and Confirming Delivery of Said Coordinated Presentation from said Step of Processing" in

DEFENDANTS' PROPOSED CONSTR.

[Says that this term requires no construction]

Post-Hearing: [This term] does not [require] separate construction.

their noninfringement claim charts, they do so based not on a contrary interpretation of this phrase, but on the fact that an antecedent element, *i.e.*, the "processing" step set forth above, is not present. Therefore, there would be no "indictum confirming completion, etc." Therefore, PMC does not believe that a construction of this phrase is required at this time.

That notwithstanding, PMC suggests that an explanation to help the jury may be in order. This phrase should be interpreted in the disjunctive for the same reasons as are stated for "One of a Viewer's and a Participant's Reaction" above. Accordingly, this phrase should be interpreted to mean "an indicium effective to accomplish confirming completion of said step of processing" or "an indicium effective to accomplish confirming delivery of said coordinated presentation from said step of processing."

Post-Hearing: This phrase should be construed to mean "an indicium effective to accomplish confirming completion of said step of processing or confirming delivery of said coordinated presentation from said step of processing."

Plaintiffs' Harvey VII Chart at 30-31; Defendants' Harvey VII Chart at 28-29; Joint Summary at 78.

b) Discussion

There does not appear to be any dispute between the parties as to this claim.

c) Recommended Construction

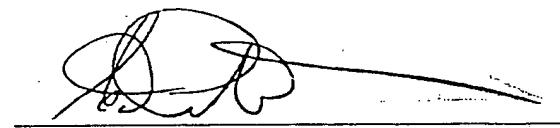
In view of the foregoing, therefore, the special master recommends that the Court conclude that no construction is necessary.

XI.
Final Report and Recommendation

This is the special master's final report and recommendation regarding Harvey I, II, III, IV, V, VI and VII under the Court's Order of July 24, 2003. The parties are reminded that any objections regarding this report and recommendation are due in accordance with the Court's Order, which provides:

IT IS FURTHER ORDERED that if any of the parties have objections to Special Master Peterson's Report and Recommendation, those objections must be filed with this Court within 30 days from the date of the filing of the Report.

SIGNED in San Antonio, Texas on March 1st, 2005.



Gale R. Peterson
Special Master

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing SPECIAL MASTER'S REPORT AND RECOMMENDATION ON CLAIM CONSTRUCTION, has been forwarded on March 14, 2005 by Federal Express and to:

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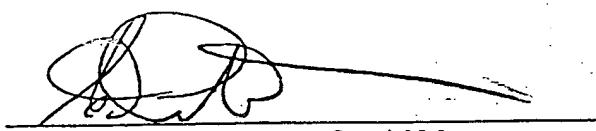
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By: *[Signature]*
Deputy Clerk

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION

PERSONALIZED MEDIA
COMMUNICATIONS, L.L.C.,

Plaintiff,

v.

SCIENTIFIC-ATLANTA, INC. and
POWER-TV, INC.,

Defendants.

CIVIL ACTION

NO. 1:02-CV-824-CAP

SCIENTIFIC-ATLANTA, INC. and
POWER-TV, INC.,

Counter-Plaintiffs,

v.

PERSONALIZED MEDIA
COMMUNICATIONS, L.L.C.;
GEMSTAR-TV GUIDE INTERNATIONAL,
INC.; TVG-PMC, INC.; and
STARSIGHT TELECAST, INC.,

Counter-Defendants.

GEMSTAR-TV GUIDE INTERNATIONAL,
INC.; TVG-PMC, INC.; and
STARSIGHT TELECAST, INC.,

Cross-Claimants,

v.

PERSONALIZED MEDIA
COMMUNICATIONS, L.L.C.,

Cross-Defendant.

O R D E R

Before the court is the Special Master's Report and Recommendation [Doc. No. 291] construing the claims of the following patents: U.S. Patent No. 4,694,490 ("Harvey I"); U.S. Patent No. 4,704,725 ("Harvey II"); U.S. Patent No. 4,965,825 ("Harvey III"); U.S. Patent No. 5,109,414 ("Harvey IV"); U.S. Patent No. 5,233,654 ("Harvey V"); U.S. Patent No. 5,335,277 ("Harvey VI"); and U.S. Patent No. 5,887,243 ("Harvey VII"). Personalized Media Communications, L.L.C. ("PMC"), Scientific-Atlanta, Inc. and PowerTV, Inc. have each filed objections to the Report and Recommendation. The court, therefore, must conduct a de novo review of the claim construction with respect to those objections. See Cooper-Houston v. Southern Railway Co., 37 F.3d 603, 604 (11th Cir. 1994).

Having reviewed the Report and Recommendation in light of the parties' objections, the court concludes that the Special Master's claim construction is well-founded, consistent with the evidence presented, and supported by the prevailing law. Accordingly, the court hereby ADOPTS the Report and Recommendation [Doc. No. 291] as its order with the following exceptions:

- (1) On page 424 of the Report and Recommendation, the Special Master stated that the phrase "programmed with information of the composition of said signal" is recited in Claim 6 of Harvey VI.

The phrase "programmed with information of the composition of said signal," however, is actually recited in Claim 7 of Harvey VI, as the Special Master noted on page 423 of the Report and Recommendation. Thus, the court modifies the Report and Recommendation to correct this typographical error.

(2) PMC has requested clarification of the term "receiver/distribution means" recited in Claims 1, 2, 7, 9, and 10 of Harvey IV and defined by the Special Master on pages 210-211 of the Report and Recommendation. Specifically, PMC states that it is unclear from the statement of corresponding structures¹ whether all of the elements together make up the corresponding structure or whether any one of the receiver/distribution structures disclosed in the specification may constitute the corresponding structure.

As it appears to the court that there are no substantive objections to PMC's request for clarification by Scientific-Atlanta and PowerTV,² the court hereby clarifies the definition of "receiver/distribution means" to state that each of the five

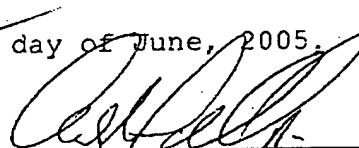
¹ The corresponding structures identified by the Special Master are elements 50-62, as depicted in Figure 6A. Report and Recommendation at 211 [Doc. No. 291].

² In response to PMC's request for clarification, Scientific-Atlanta, Inc. and PowerTV, Inc., do not address the substance of PMC's request. Instead, they merely point out that the definition adopted by the Special Master tracked the language originally proposed by PMC.

alternative receiver/distributor means disclosed in Figure 6A and identified by the Special Master as the corresponding structures constitutes an alternative structure that may separately perform the recited functions.

The court also notes that Scientific-Atlanta has attempted to "preserve" its objections to the Report and Recommendation. Defs.'s Objections to Special Master's Report and Recommendation at n.1 [Doc. No. 303]. On June 19, 2003, the court entered an order requiring all objections to the Report and Recommendation to be filed within 14 days after issuance of the Report and Recommendation [Doc. No. 118].³ While the court cannot force a waiver of Scientific-Atlanta's rights on appeal, the court will enforce its June 19 Order and will not consider any late objections to the Report and Recommendation unless new legal authority is discovered or the order is clearly wrong. Thus, to the extent the court is permitted to do so, it denies permission for Scientific-Atlanta to reserve its objections to the Report and Recommendation.

SO ORDERED, this 6 day of June, 2005.


CHARLES A. PANNELL, JR.
United States District Judge

³ The court later extended the deadline until April 11, 2005 [Doc. No. 296].

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